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West Virginia Pulp & Paper Heads Retire

Thomas and Adam K. Luke Resign As President and Vice President-Treasurer After 53 and 56 Years Respectively of Service But Continue As Directors — David L. Luke, Jr. Elected President.

Thomas Luke, president, and Adam K. Luke, vice president-treasurer, of West Virginia Pulp and Paper Company, retired January 16 after 53 and 56 years of continuous service with the company. Both were re-elected directors at the annual meeting of stockholders held at the company's headquarters offices, 230 Park avenue, and the directors thereafter elected them chairman and vice chairman of the board for the ensuing year.

David L. Luke Jr. New Head of Company

David L. Luke, Jr. was elected president of the company to succeed Thomas Luke. He has been a director since 1932 and a vice president since 1934. David Graham was elected treasurer to succeed Adam K. Luke. Lawrence W. Strattner and James W. Towsen were elected vice presidents.

An executive committee was created by the board of directors and the following directors were selected as members: Thomas and Adam K. Luke, Edwin S. Hooker, Thomas H. Stirling, Paul B. Lacy and David L. Luke, Jr. The policies of the Company will be determined by the executive committee, which will report to the board of directors.

Thomas Luke Started in Family Mill in 1892

The retiring president, Thomas Luke, started work in the family's paper mill in May, 1892. He was made a director in 1905 and was elected vice president in 1912 and president in 1934. His brother, Adam K., the retiring vice president-treasurer, has worked for the company since September 1889. He was assistant treasurer from 1899 to 1904, when made a director and elected treasurer. He became a vice president in 1932.

The company's new president, David L. Luke, Jr., is a grandson of William Luke, who, with his six sons, founded the business in 1888 at Piedmont, W. Va. His father, David L. Luke, Sr., served as president from 1921 until his death in 1934. Mr. Luke, Jr. started to learn papermaking in the company's Tyrone, Pa., mill in 1922 upon graduation from Sheffield Scientific School at Yale University. He was made assistant to the president and a director in 1932.

Other New Officers

Mr. Graham, treasurer-elect, has served in Washington with the War Production Board the past several years. In 1942 he was appointed chief of the pulp section, Pulp and Paper Branch. Since 1943 he has been director of the office of pulp allocation, Forest Products Bureau of WPB. Formerly he was director of J. Walter Thompson Company, Ltd., of London, and was associated with J. P. Morgan & Co. He is a graduate of Queen's University, Belfast, Ireland, and of Massachusetts Institute of Technology and the Harvard School of Business Administration.

Mr. Strattner, who is engaged in the research and production activities of the business, joined the company in 1916. Prior to that he was employed by Aetna Explosives Company. He has served in numerous capacities with the company, including superintendent of the electrolytic bleach plant at Mechanicville, N. Y.; superintendent of an acetone plant at Luke, Md., during World War I; and as an industrial engineer. Mr. Strattner is a graduate of the University of Dayton.

Mr. Towsen has directed the company's personnel relations since 1933 and has specialized in personnel work since 1919, first with Lycoming Rubber Company and U. S. Rubber Company, and later with Industrial Relations Counselors, Inc. He is a graduate of Penn State.

Company Operates Six Mills

The company operates six paper and paper board mills located in New York, Pennsylvania, Maryland, Virginia and South Carolina. Nearly half of its current production is for direct war purposes. It employs 6,800 workers and is owned by 1,326 preferred and 1,966 common shareholders. In addition to making many types of papers for printers, book and magazine publishers, as well as kraft and liner-board for industrial users, the company produces various chemical products, now classified as war materials.

Swedish Pulp Exports Decline

Safe-conduct ships transported 19,500 metric tons of newsprint and 11,500 tons of other kinds of paper from Sweden to overseas markets during the first quarter of 1944, says a report to the Department of Commerce. Pulp shipments during the same period included 61,000 metric tons (dry weight) of sulphite, 16,000 tons (dry weight) of sulphate, and 1,000 tons (dry weight) of mechanical pulp.

Exports of pulp are said to have declined since March on account of the military situation in Europe but Swedish mills continued to operate at about the same level and have now stored up approximately 600,000 metric tons of pulp for shipment at a later date.

Chemistry Institute to Build Addition

New Building Will Expand Facilities For Research and Development of Shipping Containers and Packaging Problems — Paper Firms Make Contributions To Riverview Hospital — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., January 15, 1945—Preparations are being made at the Institute of Paper Chemistry, Appleton, for construction of a new building, 40 feet wide and 60 feet long, south and west of the present cluster of buildings, as a laboratory addition.

The new structure will be one-story and basement, with foundations designed for a second story later.

The building will be used in the expansion of the container section of the Institute, which is devoted to research and development of shipping containers and packaging problems. Much of it will be conditioned to specific humidities and temperatures. The expansion is to permit additional research which has been carried on for some time at the Institute, working both with official agencies and industry. Urgency of the research on packaging problems is a result of immediate war needs.

Ben B. Ganther Company, Oshkosh, Wis., has the contract and erection of the building, of steel, concrete and cinder blocks, is to be started soon. Orbison and Orbison, Appleton, are the architects and engineers.

Paper Concerns Contribute to Hospital

Three paper firms have made substantial contributions to the improvement and equipment fund of Riverview Hospital at Wisconsin Rapids, Wis. Consolidated Water Power and Paper Company contributed $10,000, and Ahdawagam Paper Products Company, $3,500, both of these firms being located at Wisconsin Rapids; Nekoosa-Edwards Paper Company, Port Edwards and Nekoosa, Wis., contributed $5,000.

Because of the heavy drain on available hospital equipment by the army and navy, civilian hospitals are experiencing difficulty in obtaining new equipment. Riverview has made a study of postwar demands, and the funds contributed will be used to maintain the hospital in the front ranks to meet these demands.

Trees for Tomorrow Inc. Outlines Plans

Objectives and plans of Trees for Tomorrow, Inc., a non-profit organization sponsored by Wisconsin River Valley paper mills for the purpose of promoting forestry and forest management were outlined January 11 at a meeting of the Kiwanis Club at Wisconsin Rapids, Wis., by M. N. Taylor, executive director of the organization. He pointed out that paper mills of the Wisconsin valley represent an investment of $60,000,000 with an annual production of $80,000,000 worth of goods.

In normal peacetime years, Mr. Taylor said, those mills employ 6,100 persons. In Wood County (Wisconsin Rapids, Port Edwards and Nekoosa) 73 per cent of all employees get their income from the manufacture of paper, he said. The annual consumption of pulpwood by Wisconsin valley mills amounts to 14 million dollars, only 20% of which is produced in Wisconsin.

Of the 517,000 acres in Wood County, 100,000 should be reforested, he asserted.

Nekoosa-Edwards Paper Company, Port Edwards, has acquired tax certificates on small areas of land in the county and plans to reforest them after legal negotiations have been completed.

Four Wisconsin Valley Reservoirs Empty

Four upper Wisconsin river reservoirs of the Wisconsin Valley Improvement Company, Wausau, Wis., were empty on January 7, a company report stated. Total storage in the company's reservoirs on that date was 4,202,000,000 cubic feet. Of this 3,015,000,000 were in the upper river reservoirs and the remaining 1,185,000,000 cubic feet in the Big Eau Pleine reservoir. The Little Deerskin, Seven-mile, Lower Nine-mile and Squirrel reservoirs were empty.

Total storage a year ago was 8,115,000,000. In 1943 it was 10,943,000,000 and in 1942 it was 11,959,000,000 cubic feet. Storage on January 7, 1945, was only 24.69% of the total reservoir capacity. Precipitation during the first week of this year, as measured at 26 company stations in the river basin was .15 of an inch, and the shortage of precipitation since January 1, as compared with the 55-year-average for the same period was .11 of an inch.

Badger-Globe Mill Reports No Accidents

Badger-Globe mill of the Kimberly-Clark Corporation at Neenah, Wis., reported that there were no accidents to any of its employees during December, 1944.

S. D. Wells Speaks on Waste Utilization

S. D. Wells of the Institute of Paper Chemistry, Appleton, Wis., spoke on "Waste Paper Utilization and De-Inking Processes," in an address at the sixth session of the non-technical course in pulp and paper at the Menasha School of Vocational and Adult Education on Wednesday evening, January 10. Five more meetings of the group are scheduled, with the final one set for Wednesday, February 21.

Lakeview Credit Union Makes Good Report

The Lakeview Credit Union of Kimberly-Clark's Lakeview mill at Neenah, Wis., has 820 active members and net assets of $78,228.15, it was reported at the annual meeting last week. Some 397 loans totalling $30,239.65 were made to members last year. R. H. Corey is president.

Wips Observe First Anniversary

Women in Production Service at the Lakeview mill of Kimberly-Clark observed their first anniversary on Friday, January 12. Among their important contributions are a reduction in absenteeism among women, an increased participation in war bond and saving stamp programs, and about 500 suggestions to the management. The Wips plan some type of formal observance of the anniversary, but don't expect a major celebration because of wartime restrictions.

F. L. Mitchell Appointed to Prices Board

Succeeds R. L. Weldon As Deputy Coordinator of the Pulp and Paper Section of Canadian Prices Board — Old Timers Get Together — Overseas Newsprint Shipments Increase — Other News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 15, 1945—F. L. Mitchell, of Montreal and Merritton, Ont., has been appointed deputy co-ordinator of the pulp and paper administrations of the Prices Board, to succeed R. L. Weldon, president of the Bathurst Power and Paper Company, of Bathurst, N. B., who has resigned the position, but who remains as special consultant. Mr. Mitchell, a graduate of McGill University, has been associated with the pulp and paper industry since 1921. He was operating manager for Alliance Paper Mills of Merritton when he joined the staff of the Prices Board in 1942 as technical adviser to the pulp and paper administrations. It was in 1942, also, that Mr. Weldon became newsprint administrator for the Board. Great appreciation for Mr. Weldon's work was expressed by Donald Gordon, the chairman of the Board, on the occasion of Mr. Weldon's retirement.

Old-Timers Get Together

Old-Timers in the pulp and paper industry in the Province of Quebec staged a unique event when they gathered together in Montreal to make a presentation to Hubert Biermans on the occasion of his 80th birthday.

Born in Holland and educated in Belgium, Mr. Biermans became an outstanding engineer in the latter country. He built a railway in Corsica, another in Algeria, and the first railway in what is now the Belgian Congo.

In 1900 he was sent to Canada by a Belgian syndicate to liquidate, if necessary, the original Belgo-Canadian pulp mill at Shawinigan Falls, Que. Instead, Mr. Biermans proceeded to put it on its feet, and it became one of the most important factors in the development of the pulp and paper industry in Canada. It was at this time that John Stadler, the well-known pulp and paper engineer, became associated with Mr. Biermans, and for a period of well over a quarter of a century they worked together in the development of the undertakings of the Belgo Company. Mr. Biermans was always a picturesque character at all pulp and paper events, and never hesitated to make known his views in connection with any problems that might arise, particularly in marketing the products from Canadian mills. Ultimately the Belgo Company, of which he became president and general manager, was sold to a Canadian syndicate, and later it became part of what is now known as the Consolidated Paper Corporation.

After the sale Mr. Biermans went back to Belgium. Early in the present war, and nothwithstanding his great age, he returned to Canada and took up an attractive estate in the outskirts of Montreal. At the birthday party staged for him in Montreal a silver tray, engraved with the signatures of 82 of his friends, was presented to him. While the event was put on principally to make this presentation, it turned out to be a gathering of old-timers, and those who attended it say it was a wonderful thing to see the great friendship that had been maintained between the old pals, Biermans and Stadler.

4-H Clubs to Aid Forest Protection

One of the most significant measures being taken in the Province of Quebec in connection with forest conservation is in the encouragement of 4-H clubs, the counterpart in the forest areas of the province of the big 4-H agricultural organization in the United States. Dr. A. R. Gobell, manager of the Forestry Association of the Province of Quebec, who is in Montreal completing arrangements for the holding in Montreal in August next of the annual convention of these clubs, says that hundreds of youths in the rural districts now belong to these clubs, and he anticipates that more than 500 youths will come to the city for the two-day convention.

Movement Started in 1942

The movement started in Quebec in 1942 with 10 clubs, and he expects that by the end of the present year the organization will number 100 clubs with a membership of 3,500. He said the youths had already performed valuable services in forest conservation and on one occasion fought threatening forest fires for four days when adult help was unavailable. In the future, he explained, they would save the province much in the way of timberland by their studies in forestry conservation. Many business men are taking a keen interest in the movement and are offering valuable assistance. The organization will establish more than 50 recreational centres for the use of tourists in the province. These centres, which will be along the main highways, will have every facility for the comfort of travelers, and will be staffed chiefly by members of 4-H clubs.

Overseas Newsprint Shipments Increase

The most marked feature of newsprint shipments from Canada during the past year was the steady increase in shipments to overseas markets. From a low of 195,312 tons in 1942, it advanced to 383,723 tons in 1944, which was 116,918 tons more than in the previous year. This increase has been fostered by urgent requests in connection with the war effort, and has been a factor in keeping down domestic deliveries and restricting deliveries to the United States. Canada's production in 1944, at 2,991,782 tons, was 8,985 tons more than in 1943. That the commitments to ship 200,000 tons per month to the United States have been maintained is shown by the fact that although 120,101 tons less were shipped to the U. S. than in 1943, the total shipped for the year was 2,429,658 tons. The amount shipped for domestic consumption, at 187,227 tons, was less by 6,593 tons than in 1943. It is interesting to note that Canada's total production of newsprint in 1944 showed an increase of 4.3% as compared with that in 1939, the last year before the war, and that the increase in deliveries to Canadian consumers was 4.9%. To the United States the shipments increased by 235,532 tons, as compared with the shipments in 1939.

Paper Supply Situation is Worse in Chicago

Increase In Output of Wrapping Papers By WPB Would Only Slightly Add To Civilian Supply — Decreases In Envelope and Gumming Papers Would Tighten Existing Supply — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., January 15, 1945—While the first quarter pulp allocations were virtually the same as for the last quarter of 1944, Chicago paper trade executives reported this week that the situation would be worse because of using up of inventories by paper users, a situation which was constantly bringing more demand into play. As one paper trade executive expressed it, "many civilian users built up considerably large inventories of paper expecting that 1945 would see the break. These processes of building up began about the time of Pearl Harbor. Now, with no break in supply coming, added demand is coming on to the market—a demand we have no chance to take care of for a long time to come."

Some increases in production of wrapping papers —as announced by WPB—would hardly be felt, according to local paper trade men, while the slight decreases in gumming paper, envelope paper and similar lines, including absorbent papers, meant "more grief" than ever before.

Profitwise, the paper industry here reported a fair year with some of the low cost mills doing a fairly good job of it, according to local representatives. While the Government has been a consistent customer it has not recognized squeezes in many lines and the heavy addition of taxes and other costs.

Specifically, all markets here were in a whirl with the "military papers" and wrapping papers reportedly in the worst predicament though setup and folding boxes were reported a close second. Waste paper collections remained "only fair" as very inclement weather continued.

WPB Clears Chicago Sun

The War Production Board, acknowledging an error in its order requiring the Chicago Sun to reduce its newsprint consumption by nearly 900,000 tons by the third quarter of 1945, revoked the suspension and said it never should have been ordered. The order, issued last November 10, charged that the Sun had consumed in 1944's second quarter the above total of newsprint tonnage in excess of the quota established by WPB's printing and publishing division. This week it was reported that the WPB appeals board had found that the Sun's quota was too small and that, therefore, the suspension was unwarranted. It was determined that the Sun actually used less newsprint in the second quarter of 1944 than it should have been permitted to consume under a fair quota as determined by the appeals board. During the actual appeals process, the WPB appeals Board sent a memorandum to the compliance division which exonerated the Sun.

Salesmen to Call Special Meeting

The western division of the Salesmen's Association of the Paper Industry will hold a special meeting on Monday noon, February 5—two weeks in advance of the annual meeting of the Association in New York City—to take care of the business which usually characterizes the New York conference. So many Chicago members of the SAPEYES will not make the eastern trip, because of travel restrictions, that recommendations of the nominating committee, reports of various committees and budget procedure will all be taken care of in advance. Results will be tabulated, according to Burt Fisher, president of the SAPEYES, and taken to New York for presentation and action two weeks later. The idea behind the special meeting at the Hotel Sherman is to give all members, regardless of whether or not they make the trip, a full voice in association affairs while holding travel to a minimum. President Fisher, Vice President Pat Patterson of the Flambeau Paper Company and only a handful of members are expected to make the trip East. The western division last week announced its latest member—Ray Bloomstrand of the Nekoosa-Edwards Paper Company.

W. J. McDowell Appointed

W. J. McDowell has been appointed manager of out-of-town sales for the Chicago Paper Company according to an announcement made last week.

Luke Johnsos to Talk to Salesmen

Luke Johnsos, a coach of the Chicago Bears professional football team and sales executive representing the Zellerbach Paper Company in this territory, is to be the featured speaker at the Monday noon, January 29, meeting of the western division of the Salesmen's Association of the Paper Industry. The meeting, as usual, will be at the Hotel Sherman. Big Luke—whose last name is probably more misspelled than any other name in the telephone book, will bring along about 1400 feet of excellent film showing exciting moments in professional football games.

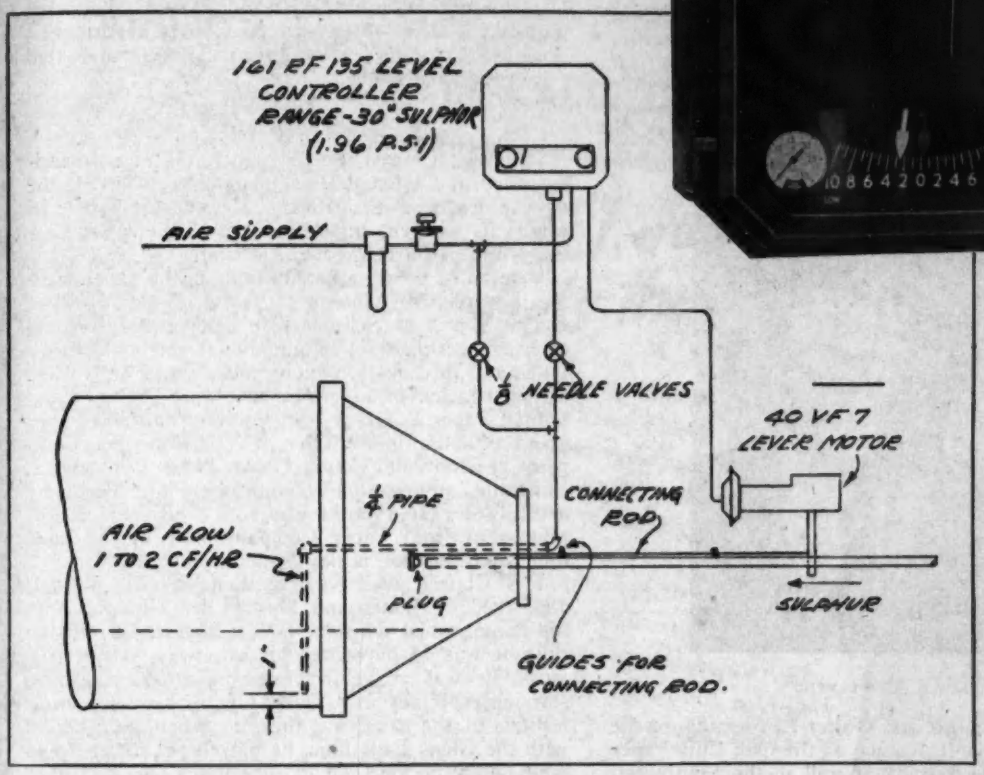
Propose New Labor Contract

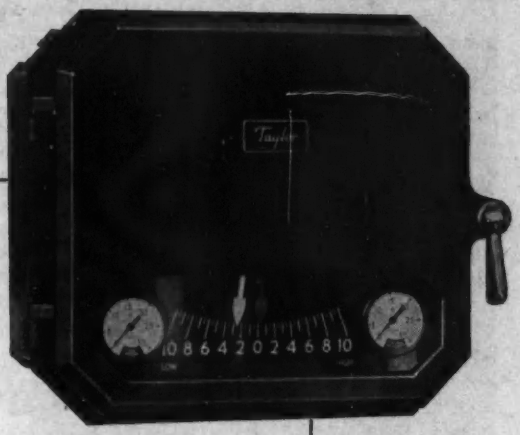
A proposed new labor contract between seven local labor unions and various freight associations in Chicago and Illinois, comes up now as a "completely disputed case." A hearing on the case has been set for January 16, although by agreement, the hearing may be postponed a few days. Demands include increasing wages and includes a provision for not less than $5 a week increase for all drivers receiving more than union contract wages. Affected are thousands of drivers on local cartage and pickup and delivery trucking in the Chicago area. Long distance drivers are not involved, but the transportation problem of a number of paper jobbers and distributors is genuinely affected.

Professional Paper Group Meets

The Chicago Professional Paper Group will hold its regular monthly meeting next Monday evening, January 15, in the dining rooms of the Chicago Bar Association with Harry Weston, newly elected president, presiding. It will be "Suppliers Night" and while no formal speaking program has been announced there will be plenty of entertainment and a general good time.

How to keep Sulphur Liquor on the Level





IF YOU want to burn sulphur at maximum efficiency and get the highest percentage conversion of sulphur to dioxide, you've got to have a *practical level control system*. Taylor will take care of this for you with a Level Controller for rotary sulphur burners. (See diagram).

Level control of molten sulphur in the burner eliminates wide variations in the effective combustion area of the burner, improves uniformity, and lowers the production cost of the cooking liquor. If bulk sulphur is furnished to the burner through a hopper and screw conveyor, and automatic control is not practical, an indicating or recording instrument can be supplied so the operator can regulate the sulphur supply to maintain any desired level.

We are proud that, in developing this system, Taylor has helped the pulp industry advance another step toward automatic control of all important production and processing units and increased efficiency in plant operation. If you need pulp or paper processing instruments, call your Taylor Field Engineer. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording, and controlling temperature, pressure, humidity, flow and liquid level.*

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ACCURACY FIRST

IN HOME AND INDUSTRY

★ KEEP ON BUYING U. S. WAR BONDS AND STAMPS ★

Obituary

E. T. Fleming

With the passing of Ervin T. Fleming, Sr., president and general manager of Fleming & Sons, Inc., Dallas, Texas, whose death was briefly mentioned in a recent number of the PAPER TRADE JOURNAL, the paper industry has lost one of its most progressive and high spirited leaders.

Born in San Jose, Cal., July 16, 1873, Mr. Fleming spent his boyhood and young manhood in Washington and Oregon where his family was engaged in the paper business. In 1893, when his father, John G. Fleming, Sr., purchased a small paper mill on the outskirts of Dallas, young Ervin came to Texas to assist

ERVIN T. FLEMING

his father and his brother, Walter L. Fleming, in the operation of the mill. Known as the Oak Cliff Paper Mill this was the first paper mill in the Southwest.

Raised in the paper-making industry of the Northwest, where the industry even at that time was in a highly advanced stage, the Flemings immediately began the improvements and innovations which have continued as a part of the manufacturing program of Fleming & Sons, Inc., since that early day when the capacity of the mill was eight tons a week with a payroll of five men.

Today the paper manufacturing plant of this organization is the largest of its kind in the Southwest and extends over nearly 200,000 square feet of ground space. Its weekly production is more than a thousand tons, while two hundred and fifty employees maintain day and night operations—seven days a week and Fleming Paper Products are known from coast to coast.

In 1898, upon the death of his father, Ervin T. Fleming was made president of the company, and in 1922 when his brother passed away, Mr. Fleming had on his hands not only the obligation of carrying on the business, but also the job of training the third and fourth generations of Flemings in the high standards of the Fleming tradition, as all officials of the firm have literally "grown-up" in the industry.

Mr. Fleming's death came suddenly early on Christmas morning, a few minutes after he had been taken to St. Paul's Hospital.

During his fifty-two years in Dallas Mr. Fleming was active in civic and philanthropic affairs. He was a member of the Knights of Columbus, the Dallas Athletic Club, the Koon Kreek Hunting and Fishing Club, and the Knife and Fork Club. He was a member of the Holy Trinity Catholic Church and sponsor of many church projects. A requiem mass was conducted at Sacred Heart Cathedral before interment in Calvary Cemetery.

Mr. Fleming is survived by his wife; one daughter, Mrs. George Clark Watson of Washington, D. C.; two sons, John G. Fleming, and E. T. Fleming, Jr.; a sister, Mrs. Minnie Corder of Colorado Springs, Colorado; seven grandchildren and two great-grandchildren.

James E. Church

James E. Church, retired paper mill superintendent, died at Carthage Hospital on December 31, the day before his 80th birthday. He was the father of James R. Church, superintendent of the West Carthage mill of Carthage Paper Makers, Inc.

Veteran of nearly a half century in the paper making industry, Mr. Church started at the age of 14 in Bullard's mill at Schuylerville and retired in 1935 after a career that took him to mills throughout eastern U. S. and in Canada. Among mills where he worked as paper maker or superintendent were Bullard's and United Paper Board at Schuylerville, Fairfield Paper and Box at Baltimore, Ohio., C. M. Robertson Company at Montville, Conn., Upton Paper Company at Stillwater, and finally, Wood Flong Paper Company at Stillwater. In 1906 he was with the Carthage Sulphite, Pulp and Paper Company here in the same mill where his son is now superintendent.

Mr. Church was born at Schuylerville Jan. 1, 1865, son of James and Mary Ellen Church. Both his parents died when he was a boy, and from the time he was 14 he earned his own way. Besides his work, he was active in various sports and games, starring especially in baseball. One of his fond recollections of the game was the time when, as a player with the Glens Falls nine, he played against the man who later became Chief Justice Charles Evans Hughes.

John C. Deltgen

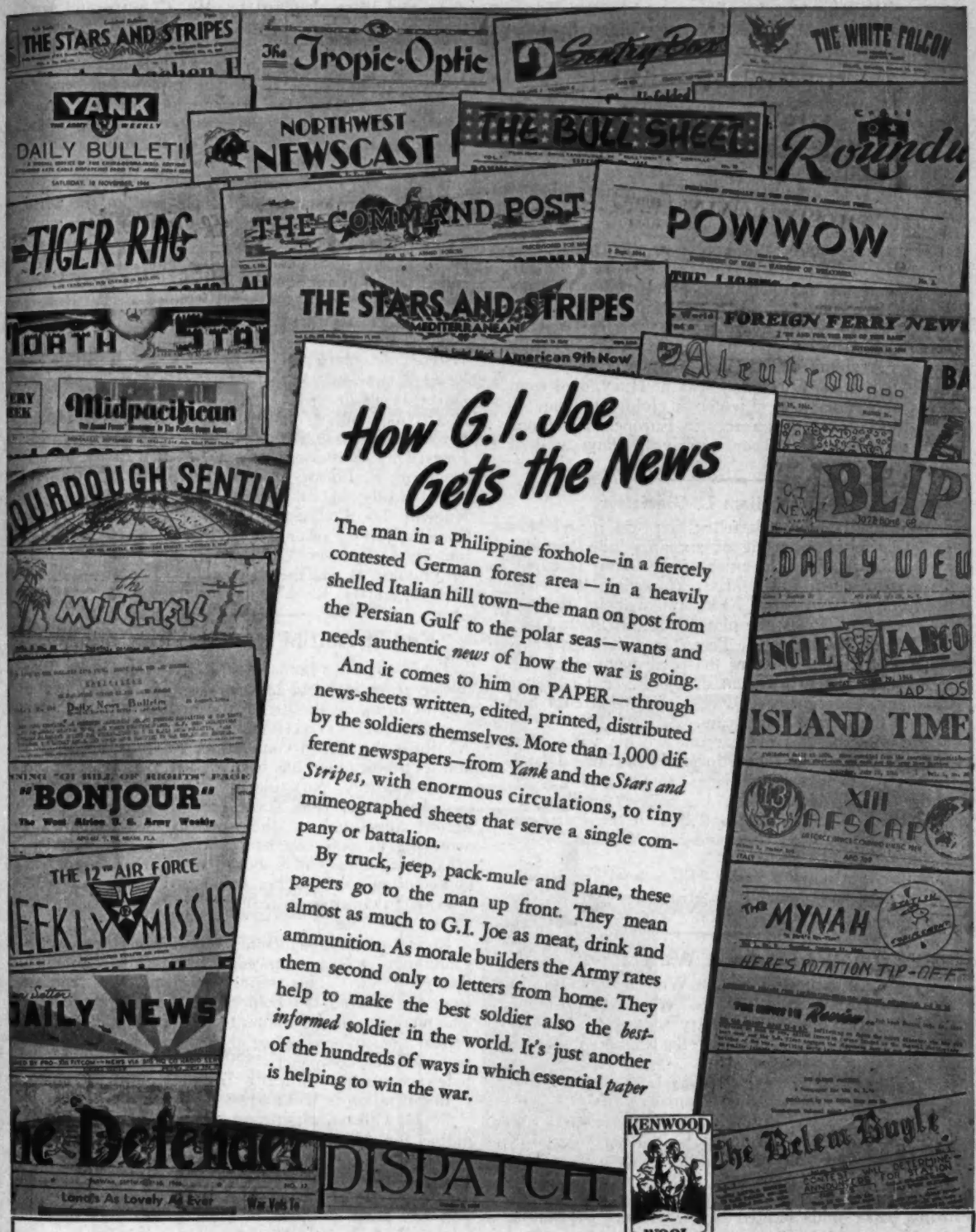
John C. Deltgen, 52, superintendent at the Appleton Coated Paper Company, Appleton, Wis., died unexpectedly Sunday morning, January 31, at his home at Appleton. He had been employed by the company for 33 years. He was a veteran of World War I and a member of the Fraternal Order of Eagles.

Survivors include his parents, Mr. and Mrs. Charles Deltgen, Appleton; two sons, Lester, Appleton, and Corporal Harold, who is with the mechanized cavalry near Luxembourg; three brothers, and four sisters.

Funeral services were conducted Wednesday, January 3, in Appleton by the Rev. W. H. Gammelin. Burial was in Highland Memorial Park, Appleton.

Mrs. Burt Williams

Mrs. Burt Williams, whose husband is director of promotion of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., died Tuesday evening, January 2, after a long illness. Funeral services were conducted Thursday afternoon, January 4, at the Stanton W. Mead residence, by the Rev.



How G.I. Joe Gets the News

The man in a Philippine foxhole—in a fiercely contested German forest area—in a heavily shelled Italian hill town—the man on post from the Persian Gulf to the polar seas—wants and needs authentic *news* of how the war is going.

And it comes to him on PAPER—through news-sheets written, edited, printed, distributed by the soldiers themselves. More than 1,000 different newspapers—from *Yank* and the *Stars and Stripes*, with enormous circulations, to tiny mimeographed sheets that serve a single company or battalion.

By truck, jeep, pack-mule and plane, these papers go to the man up front. They mean almost as much to G.I. Joe as meat, drink and ammunition. As morale builders the Army rates them second only to letters from home. They help to make the best soldier also the *best-informed* soldier in the world. It's just another of the hundreds of ways in which essential *paper* is helping to win the war.

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Kenwood Mills

Albany New York

Robert W. Kingdom. She is survived by the widower; a daughter, Mrs. Mead; a son, Gilbert D., Wisconsin Rapids, and four grandchildren. Burial was in Forest Hill cemetery.

G. M. Huey

George M. Huey, president of the Denney Tag Company, West Chester, Pa., died on January 2d in Harrisburg Hospital. He was under treatment there since the preceding Friday when he became ill on a train while returning from Chicago. An apoplectic stroke caused his death. He was 66.

Mr. Huey entered the employ of the Denney Tag Company in 1901 and became president in 1919. His home is at 106 South Church Street, West Chester. He was a member of the board of managers of the Chester County Hospital, the West Chester Board of Health, the University Club, Seaview Club, Absecon and the Aronimink Golf Club.

His first wife, Charlotte Pleasant Huey, died some years ago. Their son, Lieutenant John D. Huey, is with the U. S. armed forces in Europe. His second wife, Beatrice K. Huey, survives, along with a brother.

Major William L. Glatfelter

Major William L. Glatfelter, son of Mr. and Mrs. P. . Gladfelter, was one of six men killed Sunday night, January 7, in the crash of any Army transport plane near Horn Lake, Miss. According to an announcement from Stout Field, Indianapolis, through the Associated Press, the plane, based at Stout Field, was bound for Memphis, Tenn., from Tinker Field, Oklahoma City. Details of the crash were not given.

The son of the president of the P. H. Gladfelter Company, Spring Grove, Pa., Major Gladfelter had been in the service four years.

Surviving besides his parents are his wife, Mrs. Irene Johnston Gladfelter, formerly of Long Island, N. Y.; one daughter, and three brothers and a sister, Philip H. Gladfelter, III, U. S. Navy, Theodore Gladfelter, U. S. Army, stationed in the European theater; George Gladfelter, and Mrs. William Eyster, York.

Major Gladfelter attended Hill School and Brown University, and prior to entering service was employed at the York corporation.

TAPPI Meets at Watertown

The January meeting of the Watertown Group of the Empire State Section of the Technical Association of the Pulp and Paper Industry was held Thursday evening, January 11, 1945 at the Hotel Woodruff, Watertown, N. Y.

The speaker of the evening was J. Walter Couture, chief engineer of the Dilts Company, Fulton, N. Y. About 50 attended. Mr. Couture, whose subject was "The Hydrapulper" prefaced his talk with a brief history of the Dilts Company, showing how this company started back about 1860 when Frank Dilts, a blacksmith, started doing small repair jobs for the many paper mills located in the vicinity of Fulton. As his contacts with paper mills grew, he started manufacturing paper mill machinery. About 1890 Mr. Dilts was making many improvements in already existing equipment.

The Hydrapulper, a piece of defibering equipment only, was developed in 1939. The theory behind the Hydrapulper is that a differential in the speed of stock within creates hydraulic action causing defibering. Various problems were encountered in its development and were sketched by Mr. Couture and how these problems were solved was explained. Some of the points emphasized by the speaker were: 1. It is not a piece of refining equipment; 2. It will not drop freeness of stock; 3. It defibers rapidly but because the pulp is only in the Hydrapulper 10-15 minutes there are some small specks of unbroken pulp. These specks are readily taken care of in the usual refining equipment; 4. It will work on wet strength broke if sufficient heat and certain chemicals are added; 5. It will defiber frozen pulp but some heat in the form of steam is required; 6. It can be used in batch or as a continuous process. Mr. Couture concluded his talk by answering questions from the floor. The meeting ended with the announcement that at the next meeting, February 8, it was hoped to have F. W. Robert speak on the Roberts Grinder.

Those present were. W. R. Adams, W. J. Argy, Wilfred Arsenault, M. H. Bennett, A. E. Branche, E. Q. Clarke, Walter Couture, T. A. Crounse, G. Dures, Wells Forbes, C. Ives Gehring, E. A. Godfrey, F. C. Goodwill, R. J. Hackett, J. I. Haney, H. A. Horstmann, Tom Hutteman, C. T. Jewell, E. M. Jones, D. J. Kesterke, F. Lang, A. B. Leachy, James Lewis, F. E. Loessi, William Martin, D. C. Mather, W. B. Mills, M. D. Myers, Tom Newcomb, C. A. Nugent, E. S. Nuspliger, C. F. O'Brien, J. B. Ormsby, Jerry Parker, Henry Perry, Harold Remington, H. A. Spencer, G. W. Sterbeldt, Beau Thomas, G. Traynor, B. H. Treadwell, J. H. Treadwell, F. A. Walker, and H. R. Wheeler.

End of Abitibi Receivership Likely

TORONTO, Ont., January 15, 1945—After more than twelve years, it would appear that all difficulties in the way of bringing the great Abitibi Power and Paper Company out of receivership have been overcome. Abitibi is the largest company of its kind in Ontario and its predicament has been an adverse factor in the entire industry, particularly in respect to drafting post-war plans. The success of the Hughes Committee, appointed by the Ontario Government, in achieving its objective of reaching an agreement on a basis of settlement is looked upon as an important contribution to Canadian business generally. There is general thankfulness that the Abitibi matter appears about to be closed.

Receipt of a supplementary report from the Hughes Committee was announced last week by Premier George Drew. This report confirms the changes in terms offered the holders of the 7% preferred. The members of the committee report that all controversial questions affecting the company now appear to have been completely solved and that they anticipate no further difficulty in affecting a complete re-organization in its affairs.

D. H. Gibson, chairman of the Protective Committee for Abitibi's 6% preferred shareholders has sent a letter to these shareholders recommending the proposed plan, as amended, be approved. A copy of the report and of the supplementary report is enclosed and his letter outlines briefly the features of the proposed plan of settlement.

The Abitibi Bondholders' Protective Committee has received advice from the income tax department to the effect that the interest portion of the December 30, 1944, payment on the Certificates of Deposit will be considered as 1944 income for tax purposes. The payment on undeposited bonds will be considered as taxable income when received, i.e., when the bonds are presented for its payment.

HEAT RECOVERY SYSTEMS FOR DIGESTER BLOW

Two methods to recover heat from digester blow are: 1. the Vapor-Liquid Recovery System, and 2. the Surface Condenser Recovery System. Generally speaking, the former is advisable when there is appreciable carry-over of pulp from the blow, while the latter unit is best adapted for use when the steam is relatively clean. Advantages of these systems are:

VAPOR-LIQUID →

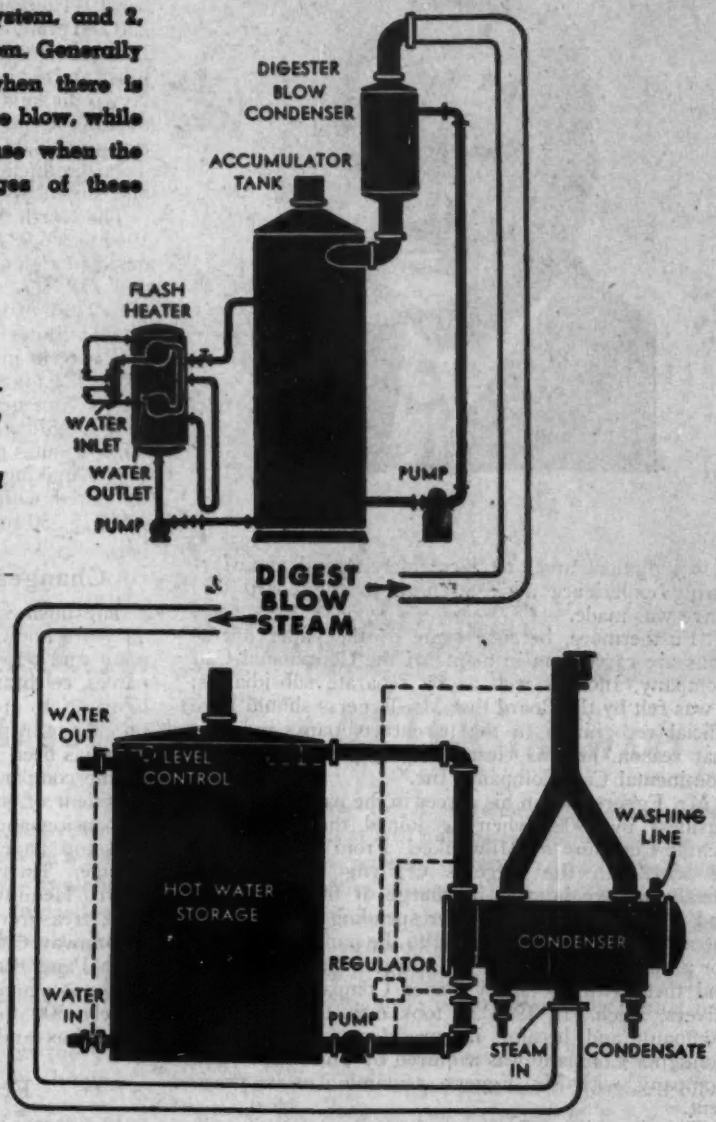
1. *Optimum heat recovery . . . approximately 9% more than with surface type.*
2. *Heating surfaces cannot be plugged with pulp.*

SURFACE-CONDENSER →

1. *Simplicity of system.*
2. *Ability to handle blows from many digesters, providing they do not overlap to exceed design ratings.*

●

Foster Wheeler designs and builds these systems and has both types in successful operation. Performance records show that the units pay for themselves within a period of 12 months.



FOSTER WHEELER CORPORATION • 165 BROADWAY, N. Y. 6, N. Y.

FOSTER WHEELER

To Have Charge of Paper Containers Div.

Hans A. Eggerss, president of the Container Company, of Van Wert, Ohio, a wholly-owned subsidiary of Continental Can Company, Inc. was elected to the board of directors and a vice president in charge of the Paper Container Division of Continental Can Company at a meeting of the board held at 100 East 42nd street, New York, recently.

In making this announcement, Carle C. Conway, chairman of the board and president, said, "Inasmuch as the company has a greatly enlarged investment in the paper industry and, as Mr. Eggerss' mature business judgment and broad commercial and manufacturing experience adds strength to the board this move was made.

HANS A. EGGERSS

"Furthermore, because some of the paper operations are carried on in plants of the Continental Can Company, Inc., as well as by separate subsidiaries, it was felt by the Board that Mr. Eggerss should have official recognition in the parent company and, for that reason, he was elected a vice president of the Continental Can Company, Inc."

Mr. Eggerss began his career in the paper container business in 1908, when he joined the A. George Schulz Company of Milwaukee. From 1912 to 1918 he was with the Eggerss O'Flyng Company of Omaha, where he was in charge of the corrugated and fiber box division. After spending two years in the armed forces, he returned to the paper business—for a time again with the A. George Schulz Company, and then with the Eddy Paper Company of Three Rivers, Mich. In 1924 he took over the Container Company and became its president. In 1942 the Container Company was acquired by Continental Can Company, with Mr. Eggerss remaining as its president.

The Container Company had its beginning in Toledo, Ohio about 1905, and at that time was known as the Toledo Fiber Pail and Package Company. In 1915 it changed its name as the result of a merger with another company. Following reorganization in 1924 when Mr. Eggerss became its head, the company improved its "Stapak" fiber drum and sold aggressively. In 1928 it moved to a new plant in Van Wert, Ohio. Since then it has developed two new fiber drums, "Fiberpak" and "Leverpak," both of which today package vital war materials, particularly chemicals and kindred materials. The subsidiary is now practically 100 per cent engaged in war work.

In addition to the Container Company plants at Van Wert, Ohio and Reading, Pa., Continental Can Company operates ten other plants in the Paper Container Division located at Passaic, Newark, and Elizabeth, N. J.; Charleroi, Pa.; St. Louis, Mo.; Utica, N. Y.; Roxbury, Mass.; Nashville, Tenn.; Pensacola, Fla.; and Independence, Kan.

December Newsprint Statistics

Production of newsprint in Canada during December 1944 amounted to 244,970 tons and shipments to 230,780 tons, according to the News Print Service Bureau. Production in the United States was 61,169 tons and shipments 61,295 tons. The output in Newfoundland was 21,883 tons and shipments were 30,461 tons making a total North American production of 328,022 tons and shipments of 322,536 tons. Total production in December 1943 was 334,591 tons and shipments were 341,014 tons.

The North American output of news print paper in 1944 was 3,984,383 tons, of which 2,991,782 tons was made in Canada, 719,802 tons in the United States, and 272,799 tons in Newfoundland. The Canadian output was 0.3 percent more than in 1943, that in the United States was 10.6 percent less, with a gain of 15.5 percent in Newfoundland, making a net decrease of 39,474 tons, or 1.0 percent.

Stocks of news print paper at the end of December were 56,571 tons at Canadian mills, 7,357 tons at United States mills, and 41,157 tons at Newfoundland mills, making a combined total of 105,085 tons compared with 99,599 tons on November 30, 1944, and 115,550 tons at the end of December 1943.

Changes Name to Heminway Corp.

The business, in Waterbury, Conn., for the past 44 years known as the Waterbury Paper Box Company and 31 years prior to 1901 under two other names, celebrates its 75th anniversary with a change of name, to Heminway Corporation. There has been no change in personnel except that Robert E. Crotty, who has been in charge of the New York sales office of the company for 10 years, has been elected vice-president of the new corporation in charge of sales. Expansion and branching out into lines in addition to setup paper boxes is the reason for the name change. Harry Hinman Heminway is president; Merrit Heminway, vice-president; Bartow L. Heminway, treasurer and Clarence N. Booth, secretary of Heminway Corporation, as they were of the Waterbury Paper Box Company; J. Paul Whitehead continues as manager of the Printing Division. Approximately 300 men and women are employed in the paper box and printing departments.

Frank Egan in Hospital

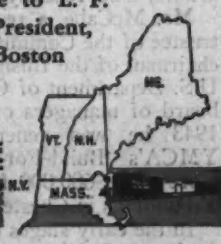
In a recent letter written from some Army hospital in the Pacific area PFC Frank Egan, on leave from Bulkley, Dunton & Co., writes enthusiastically about beds with real mattresses, hot showers and other luxuries he first encountered after long months in the field. He participated in the recapture of Guam and, according to indications, also took part in the Leyte campaign. According to latest reports Mr. Egan was about to leave the hospital.

WHAT ABOUT YOUR LABOR SITUATION AFTER THE WAR?

When the whistle blows in Northern New England Jim Brown, machinist, has something extra to look forward to. For Jim owns his own home just as do 52% of all the workmen in the towns along Boston and Maine lines. Like most of his fellow workers Jim lived here before Pearl Harbor—plans to keep on living here after the war. He and his wife and children are happy. They like New England; New England likes them.

When labor questions come up at the factory they're likely to be settled, as in Jim's family circle, by a home-made labor-management committee. That's why Northern New England has had fewer strikes than any other equivalent industrial section of the country. That's why Northern New England is a good place in which to locate—for management as well as labor. Here management will find better cooperation on the production line, reduced turnover of skilled help, and a far higher quality of output. Labor will find working *and* living conditions that can mean far more than just a job—the satisfaction of a rewarding home life and the promise of a brighter future for their children through New England's unsurpassed educational opportunities.

Boston and Maine can advise management about advantageous locations and contacts in Northern New England. We suggest you write to L. F. Whittemore, Assistant to the President, Boston and Maine Railroad, Boston 14, Massachusetts.



Fight Infantile Paralysis, January 14-31

BOSTON *and* MAINE

ONE OF AMERICA'S RAILROADS - ALL UNITED FOR VICTORY

TAPPI Cancels Convention

The Technical Association of the Pulp and Paper Industry has cancelled its convention which it had tentatively planned to hold at the Hotel Commodore, New York, during the week of February 19. The cancellation of the convention was announced by Vance P. Edwardes, president of the association, in the following notice to members:—

"Through the efforts of the committees of the Technical Association an excellent program was arranged for the annual meeting scheduled to be held from February 19 to 22, 1945, at the Commodore Hotel in New York City.

"As publicized in the press, the War Mobilization Director and the Director of the Office of Defense Transportation recently requested that all organizations, especially of a national character, cancel any meetings planned that would be attended by more than fifty persons who would need to use railroad or other long distance transportation to reach the meeting city.

"In accordance with the request of the Director of Office of Defense Transportation and in consideration of the evident shortage of technical manpower-hours available to the industry, it is the decision of the executive committee of the Technical Association that the general conference, as planned, be cancelled and that all papers scheduled for presentation be read by title, published in the regular Association media, and distributed to the membership."

Discuss Post-War Expansion

HUDSON FALLS, N. Y., January 13, 1945—A group of paper mill executives spent the past week here during which conferences for plans for post-war expansion were held at the Sandy Hill Iron and Brass Works, the Trimbey Machine Works and the American Paper Machine Engineering Works. The group included Carlos A. Ricci, industrial engineer, and Felipe Mussi, chemical engineer, of the Celulosa Argentina, of Buenos Aires, and Walter Geisler, export agent, of Montreal. The firm is the leading paper company in Argentina. It was stated they are planning for post-war expansion of their several mills and are studying paper mill methods and equipment in this country and Canada. They plan to visit plants in both countries from coast to coast. During their visit here they were the guests of the Sandy Hill Iron and Brass Works following which they left for an inspection of Canadian mills. The group plans to return here following the inspection tour.

T. B. McCabe Named to Bank Board

CHESTER, Pa., January 8, 1945—Thomas B. McCabe, president of the Scott Paper Company, was reappointed chairman of the board of directors and federal reserve agent of the Federal Reserve Bank of Philadelphia at a meeting of the board of governors, held recently.

Mr. McCabe, a resident of Swarthmore, is also a trustee of the Committee for Economic Development, chairman of the Business Advisory Committee of the U.S. Department of Commerce, and a member of the board of managers of Swarthmore College. During 1943 he was general chairman of the Chester YMCA's "Build-For-Youth" campaign which raised more than $600,000 for the construction of two new Y buildings in Chester.

In the early stages of the war, Mr. McCabe served as deputy Lend-Lease administrator, in Washington.

Sun's Suspension Order Lifted

The *Chicago Sun* was relieved last week by Walter Foster, chief compliance commissioner of the War Production Board, from terms of Suspension Order S-654, issued November 10, 1944, requiring the newspaper to reduce its normal consumption of newsprint paper by 886.89 tons, WPB's Compliance Division reported.

During the second quarter of 1944, the *Sun* consumed 886.89 tons of newsprint in excess of a quota established by WPB's Printing and Publishing Division, subject to review of the Appeals Board of WPB. This quota was later found by the Appeals Board to have been too small a quantity for the *Chicago Sun*. The newspaper did not commence publication until December 1941, and hence had no quota established under provision of WPB's general newspaper Limitation Order L-240.

Because the Appeals Board's decision re-established the *Sun's* quota on a higher basis, the chief compliance commissioner concluded that a suspension order based on the *Sun's* earlier paper quota would not be equitable. Later developments showed that the *Sun* actually used less paper in the second quarter of 1944 than it would have been permitted to use under the amount that the Appeals Board found to be the newspaper's equitable share, WPB officials said.

A stay of the suspension order's terms was granted the Chicago newspaper November 14, 1944, and subsequent review of the case by Mr. Foster has resulted in the suspension order's revocation, WPB said.

Reduces Small Orders for Chemicals

Because of heavy military requirements for glycol ethers and urea and melamine aldehyde resins, the War Production Board today amended Schedule 36 and Schedule 34 of Order M-300, the general chemicals allocation order, reducing the small order exemptions for these chemicals.

The monthly small order exemption for monobutyl ether of ethylene glycol was reduced from 4,000 to 400 pounds, according to the provisions of today's amendment. Monobutyl ether of ethylene glycol is used in the production of chemicals as a solvent, in hydraulic fluids, for metal cleaners and metal cutting oils.

Because of the critical supply of formaldehyde, used in the production of urea and melamine resins, the small order exemption was reduced from 2,000 to 550 pounds a month.

The amended schedule also requires that applications for allocations of urea and melamine aldehyde resins for the production of protective coatings be filed in accordance with Direction 2 to Order M-300, which provides ten groups of end uses for the chemical.

Urea and melamine aldehyde resins are used in the production of protective coatings, plywood wet strength paper, and for textile finishing.

Allegan Paper Products Move

Allegan Paper Products, buyers of waste paper for paper mills and mill agents for paper of various grades, are moving their plant from Liberty, Ind. to 721 North Tibbs avenue, Indianapolis, Ind. This will give them larger quarters and a siding on the B. & O. Railroad. The firm will have a complete line of finishing and shredding machinery.

FOR *Whiteness* IN BONDS, WRITINGS, BOOK & LEDGERS

For many years Helmerco Blue has been a standard product for tinting white bond, writing, book and ledger papers. Added at the beater, it has excellent working properties and good light fastness. Fine light blues in the same group of papers can also be produced with Helmerco Blue.

In the tinting of paper coatings, Helmerco Blues produce the much desired high white shades in any formula.

Our Technical Service Department will be glad to work with you in developing special dyes for specific purposes or in advising you on the use of H&M colors.

RANGE OF SHADES FROM RED TO GREEN HELMERCO BLUE	
M 4 R Conc.	2 G B Conc.
M 2 R W Conc.	M 2 G Conc.
M G W Conc.	M 4 G Conc.
M G Conc.	M 5 G

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HORTON MANUFACTURING COMPANY

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RUST—a nuisance and a very costly menace in many plants no longer need be tolerated. Laboratory magic has furnished its master.

New Sinclair products, developed to solve tremendous military rust problems, are now available for your plant problem.

Sinclair RUST-O-LENE B for exposed metal surfaces of machinery in operation, in storage, or in transit

—provides a firmly-adhering rust proofing film
—prevents rusting of clean surfaces
—halts further rusting of corroded surfaces
—has lubricating qualities
—defies any degree of moisture from mere dampness to heavy rain
—can be readily removed when desired

Sinclair OPALINE RP (Rust Preventing) OILS for enclosed oil systems, prevent internal rusting of engines, hydraulic systems, gear reducers, and similar machinery intermittently operated, stored, or transported. OPALINE RP also has ample lubricating qualities for temporary use.

Both these remarkable Sinclair rust-preventives have successfully passed the most exacting service tests, and fully meet Government specifications.

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FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending January 13, 1945

STOCKS

	High	Low	Last
A. P. W.	5⅛	4⅞	5
Armstrong Cork Co.	45½	44¾	45¼
Celotex Corp.	16¼	15	15⅜
Celotex Corp., pf.	19¼	18¾	19⅛
Certain-Teed Products Corp.	7⅜	7	7⅛
Certain-Teed Products Corp., pf.	130	129	129½
Champion Paper & Fibre Co.	29¼	28⅜	28⅝
Champion Paper & Fibre Co., pf.	114¾	114	114
Congoleum Nairn Co.	29¼	28⅜	29¼
Container Corp. of America	30⅛	29	29
Continental Diamond Fibre Co.	12¼	11¾	12⅛
Crown-Zellerbach Co.	21⅞	21	21
Crown-Zellerbach Co., pf.	103¾	103	103¼
Dixie Cup Co.	21¾	19⅞	21¼
Dixie Cup Co.,—A.	48½	47½	48½
Flintkote Co.	24⅜	23½	23⅞
Flintkote Co., pf.	...	...	...
Robert Gair	5¼	4⅝	5⅛
Robert Gair, pf.	17⅛	16	17
International Paper Co.	22¾	21	21¼
International Paper Co., pf.	91	89¾	89¾
Johns-Manville Corp.	107	101	105½
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	42	39½	42
Mac Andrews & Forbes	29⅜	29¼	29¼
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	42⅜	41½	41⅝
Mead Corp.	13	12½	12½
Mead Corp., pf. A—6%	100	98¾	98¾
Mead Corp., pf. B—5½s	95	94	94
National Container Corp.	14½	13⅞	14¼
Paraffine Companies, Inc.	57¾	57¾	57¾
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	17¼	16½	16½
Rayonier, Inc., pf.	35½	34¾	35¼
Ruberoid Co.	34⅞	34	34½
Scott Paper Co.	44½	43	43½
Scott Paper Co., pf.	112¾	112¾	112¾
Sutherland Paper Co.	35	34⅜	35
Union Bag & Paper Corp.	15¾	14½	15
United Paperboard Co.	7	6½	6½
U. S. Gypsum Co.	81	80	80
U. S. Gypsum Co., pf.	...	...	...
West Virginia Pulp & Paper Co.	25⅛	23¾	24½
West Virginia Pulp & Paper Co., pf.	108	106	106

BONDS

Abitibi Pulp & Paper Co. 5s '53	96¾	96¼	96¼
Celotex Corp. 3½s '55	104¾	104¾	104¾
Certain-Teed Products Corp. 5½s '48	102	102	102
Champion Paper & Fibre Co. 3½s '50	...	...	...
International Paper Co. 6s '55	108¼	107¾	108¼
International Paper Co. 5s '47	105	104¾	104¾
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending January 13, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	37	36¼	36¼
Hummel-Ross Fibre Corp.	8⅛	7½	7½
St. Regis Paper Co.	6⅞	6⅝	6⅝
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	5⅜	5¼	5⅜

BONDS

American Writing Paper Co. 6s '61	101½	101	101

Bathurst Co. Makes Report

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., January 5, 1945—According to the Financial Times, late reports on Bathurst Power and Paper Company indicate that the $1 dividend on the "A" stock will, contrary to earlier market feeling, be fully covered, due to improved earnings in the final quarter of the company's financial year. Increased costs have been the dominating factor in the decline in net profits earlier reported. The production in pulp and wood products in 1944 exceeded in tonnage that of 1943. At times in the past water conditions have reduced hydro-electric power available and have necessitated a larger call on production of electricity from a steam plant, but while water conditions in the past year have been favorable, the costs of wood, coal, labor, etc., have all been higher.

Another important factor has been the switch in production to meet war requirements. In 1943 the company produced 24,000 tons of newsprint, but the increase in newsprint price of $8 per ton has not helped, in the 1944 period, as the company has made no newsprint since January, 1944, on instructions of the Wartime Prices and Trade Board, and the productive capacity thus released has been used to increase the output of kraft liner and corrugating boards, for which there is a heavy wartime demand. There has been no increase in board prices and thus the profit margin has been squeezed between rising costs and ceiling prices. There was an increase in February of $8 in the export price of unbleached sulphite pulp which the company produces for sale, but the beneficial effects have been more than offset by other factors. However, the company is reported in strong financial position, and there is no funded debt.

Howard Smith To Redeem Bonds

It is reported here that the first mortgage bonds of Howard Smith Paper Mills, Limited, and those of its subsidiary, Canada Paper Company, will probably be called for redemption as of March 1st.

The parent company has presently outstanding $700,000 in 4% serials together with $3,300,000 4¼'s of '51, these being callable at, respectively, 101 and 102. Canada Paper Company has outstanding $125,000 serial 3½'s and $700,000 4¼'s, with like respective call prices. These add up to $4,825,000, and it is understood that funds to provide for the redemption thereof will be raised through the private sale of a new issue to institutional investors.

Two Hinsdale Paper Plants Sold

HINSDALE, N. H., January 15, 1945—Two Hinsdale paper plants, the Hinsdale Paper Manufacturing Company and the White Washburne Company, have been sold, it was disclosed last week.

The new purchasers are Leo Gratton and Harold Weeks of Hinsdale, who have been executives in the business, and Floyd Graham of South Hadley, Mass., head of the Graham Manufacturing Company, a paper converter.

The stock was sold by Louis Stearns and Harold Garfield, long identified with paper interests in the Ashuelot valley.

The Hinsdale Paper Manufacturing Company is a paper manufacturer, while White Washburne, a contiguous plant, is a converter.

Finch, Pruyn & Co. Elect Officers

GLENS FALLS, N. Y., January 15, 1945—The annual meeting of Finch, Pruyn & Co. was held here last week at which officers and directors for the year were chosen. The officers reelected include Maurice Hoopes, president; Samuel Pruyn, vice president; H. F. Bullard, vice president and secretary; F. B. Chapman, treasurer. The directors elected for the year include Louis P. Brown, Lyman A. Beeman, Mrs. Thomas H. Foulds, Miss Nellie M. Howe, H. F. Bullard, Maurice Hoopes, Samuel Pruyn and F. B. Chapman.

Price Bros. May Retire Bonds

There are reports that Price Brothers and Co. will soon retire their first mortgage bonds and replace them by a lower interest bearing issue. The company is also said to have been making considerable purchases of the preferred stock, and is expecting to reduce materially the amount outstanding.

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How to pick the right leather belt for the job — a conveniently-organized section on what to expect from various tannages . . . tables on how to figure belt dimensions from horsepower and speed of motor . . . further aids on figuring drives not covered by tables . . . recommendations on belt thickness and pulley size, classified by types of machine drives.

How to select between Modern Group Drive and Automatic Tension Drive (pivoted motor base).

How to select between Multiple-V-Belt and Flat Leather Belt for Automatic Tension Drive.

How to figure Flat Leather Automatic Tension Drives — useful short cuts.

How to figure prices — table on prices, another on pivoted motor base prices.

How to install your flat leather belt.

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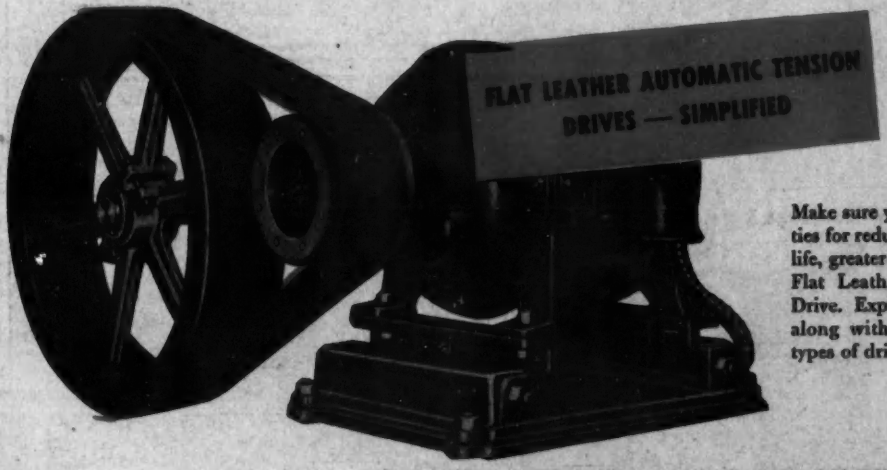

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Government Paper Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, January 17, 1945—Barton Duer & Koch Paper Company has been awarded a contract for furnishing the Government Printing Office with 50,000 pounds of white book paper at 7.4 cents. Other awards made include the following:

Barton Duer & Koch Paper Company will furnish 100,000 pounds of tag stock at 6.17 cents and the Northwest Paper Company will furnish 250,000 of white writing paper at 7.87 cents, and the same firm will also furnish 250,000 pounds of the same at 7.87 cents and 250,000 pounds of the same at 7.28 cents and 100,000 pounds of the same at the same price.

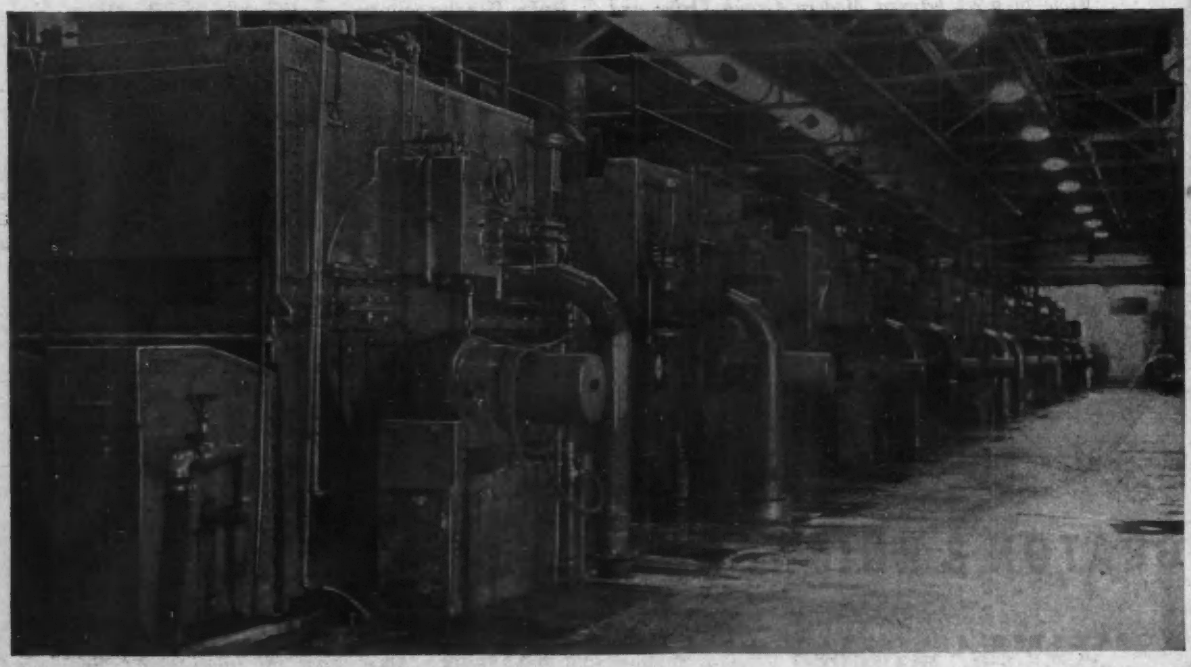
Zellerbach Paper Company will furnish 100,000 pounds of white writing paper at 8.05 cents and 268,000 pounds of white book paper at 7 cents. Bradner Smith & Co. will furnish 54,000 pounds of book paper at 8.54625 cents and 144,000 pounds of book paper at 7.95 cents. Wilcox Walter Furlong Paper Company will furnish 35,000 pounds of offset paper at 8 cents and the Fitchburgh Paper Company will furnish 700,000 pounds of writing at 15.25 cents. The Marquette Paper Company will furnish 29,300 pounds of white writing paper at 7.51 cents and the Whittaker Paper Company will furnish 57,915 pounds of white book paper at 9.22 cents.

Central Ohio Paper Company will furnish 130,000 pounds of white book paper at 6.36 cents and the same firm will also furnish 100,000 pounds of same at 6.75 cents. Paper Corporation of U. S. will furnish 233,000 pounds of bristol board at 10.4 cents and also 100,000 pounds of the same at the same price and another 100,000 pounds of the same at the same price.

Paper Corporation of U. S. will also furnish 58,800 pounds of canary paper at 24 cents; 192,500 pounds of white map paper at 12.54 cents and 462,500 pounds of the same at the same price. Paper Corporation will also furnish 115,000 pounds of white map paper at 12.54 cents and the Marquette Paper Company will furnish 60,000 pounds of white book paper at 7.72 cents. Barton Duer & Koch Paper Company, 36,510 pounds of bond paper at 13.86 cents and Eastern Corporation will furnish 314,000 pounds of white book paper at 8.14 cents. Barton Duer & Koch Paper Company will also furnish 143,500 pounds of white bond paper at 13.58 cents and R. P. Andrews Paper Company will furnish 50,200 pounds of white cover paper at 9.46 cents. Stanford Paper Company will furnish 113,400 pounds of white text paper at 11.79 cents.

Walker Goulard Plehn Company will furnish 50,000 pounds of white ledger paper at 14.45 cents and 44,000 pounds of the same at the same price. The same firm will also furnish 38,000 pounds of the same at the same price. Birmingham Prosser will furnish 63,000 pounds of canary writing paper at 8.4 cents and Mead Sales Company will furnish 150,000 pounds and 100,000 pounds of white book paper at 7.72 cents. Barton Duer & Koch Paper Company will furnish 100,000 pounds of white writing paper at 7.37 cents and the Port Huron Sulphite and Paper Company will furnish 30,000 pounds of yellow mfd paper at 13 cents.

Mead Sales Company will also furnish 115,000 pounds of white book paper at 7.13 cents, also 115,000 pounds, 73,000 pounds, 85,000 pounds of white book paper at 7.13 cents. Marquette Paper Company will furnish 50,000 pounds of white book paper at 8.94 cents.



IMPROVED WORKING CONDITIONS exist in the Roberts equipped grinder room. Operators are not annoyed by escaping steam. An exhaust system eliminates all vapors from the room. Gone are dirty grinding operations. All-enclosed construction prevents stock leakage. The wood conveyor helps in maintaining good housekeeping. Now the grinder room can become a show place of the mill.

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ROBERTS GRINDER

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Eastern Sales Representatives:
CASTLE & OVERTON, Inc., New York

There's no Shortage on "Planning for Post-War Operations"

We are unable to supply you with all the Hooker chlorine, caustic soda and bleaching powder you would like to have. And we're not going to offer you something just as good—because frankly we don't believe there is anything just as good as these Hooker chemicals.

However stymied you may be on present operations, it won't be too long now before Government's requirements will be lessened and you will be able to get the Hooker chemicals you want. If you are like most pulp and paper manufacturers, you are not wasting time bewailing the fact that you can't do what you'd like to do, but are using that time in planning your post-war operations, the replacement of old equipment, the introduction of new processes and new products, the modification and improvement of your present procedures.

Here is one spot where Hooker can be of help to you now. Our Technical Staff has devoted a great proportion of its time to the problems of your industry for many years. The information it has gained working in the field alongside pulp and paper manufacturers and in our own laboratories is available to you now. Some of the contributions of Hooker's Technical Staff have been published and are obtainable in printed form. Abstracts of three of these bulletins are given below. Copies are yours for the asking.

"Bleaching Procedure Design for High White - High Strength Kraft Pulps"

Bulletin No. 233

A procedure for high white, high strength kraft is developed step by step from a fundamental three stage procedure involving chlorination, caustic extraction and hypochlorite. The advantages and disadvantages of combining chlorination and hypochlorite reactions are discussed. Also, the use of batch and continuous methods are evaluated for the fundamental stages.

"Lime-Chlorine System in the Preparation of Calcium Hypochlorite"

Bulletin No. 234

Potentiometric studies have been made during progressive chlorinations of solutions containing 16 g. per liter, 32 g. per liter, and 52 g. per liter of calcium hydroxide at temperatures of 0° to 40° C. As a result of these studies the authors have found that: During the chlorination the hydrogen ion concentration decreased rather slowly at first with a very rapid increase in available chlorine content; further chlorination beyond a hydrogen ion concentration of 11.2 caused a very rapid decrease in pH and only a slight increase in available chlorine; when the lime is chlorinated below a pH of 8, the loss of available chlorine is very rapid, and at temperatures above 10° C., the loss is greater than that which can be maintained by the addition of chlorine, and on standing the solution loses practically all of its available chlorine; lime chlorinated to the "three second flash" of phenolphthalein, which corresponds to a pH of 11.2, produces bleach liquor which is stable for at least 48 hr.

"Production and Use of Unsettled Bleach Liquor"

Bulletin No. 242

Growing demands for increased brightness in all grades of papers put a premium on economical production. The use of bleach liquors in some degree is necessary in small plants as well as large. Appreciable economies can be realized through the use of unsettled bleach liquor in the design and operation of an efficient plant. These economies are effected in low first cost, decreased labor expense and savings in chemicals through more efficient chlorine application and use of low cost limes. Satisfactory unsettled bleach liquors can be made by preliminary screening of milk of lime. Solids in screened milk of lime settle slowly, and fines are in such small amounts and in such small particles as to be eliminated in the various screening and washing operations prior to sheet formation.

With unsettled bleach liquors, excess alkalinity in the bleaching operation can be controlled by varying amounts of excess milk of lime. Operation of chlorination and testing for end point are the same as for settled liquor.

While we are confident these Bulletins will be of interest and of help to you, Hooker's Technical Staff is also available for consultation on any problems you may have involving chemicals in the pulp and paper manufacture field. Whether on plans for the future or on immediate problems, get in touch with us.

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ARMY E NAVY

Heads G-E Research

Dr. C. G. Suits, assistant to the director of the research laboratory, has been elected a vice president of General Electric and in that capacity will be in charge of the Company's research laboratory, it has been announced by President Charles E. Wilson.

At the same time it was announced that Dr. W. D. Coolidge would retire December 31 as vice president and director of the research laboratory, a position he has held since 1940.

Dr. Coolidge, inventor of the Coolidge X-ray tube and a world-famous scientist, graduated in 1896 from the Massachusetts Institute of Technology and received his Ph.D. subsequently at Leipzig. He joined the G-E research laboratory in 1905 after a period spent in fundamental research in physics and chemistry at M.I.T. He played a leading role in the development of the modern incandescent lamp through his production of ductile tungsten. Later, when his colleague Dr. Irving Langmuir demonstrated the possibilities of a pure electron discharge in a high vacuum, Dr. Coolidge produced a radically new type of X-ray tube which has substantially superseded all previous types. Dr. Coolidge is holder of 83 patents and has been partly responsible for hundreds of others. He became assistant director of the G-E research laboratory in 1908, associate director in 1928, and director in 1932. A member of many scientific societies here and abroad, Dr. Coolidge has been awarded several medals and honors, including the Hughes, Rumford, Edison, and Faraday medals.

Dr. Suits, who succeeds Dr. Coolidge as head of research, is one of the youngest of the country's prominent scientists, graduating from the University of Wisconsin in 1927 and becoming a member of the G-E laboratory staff in 1930. He is widely known for his research in high-temperature arcs. During the war he has devoted the major portion of his time to the direction of war research under the auspices of the office of Scientific Research and Development, and as chief of Division 15 of the National Defense Research Committee, has supervised the radio co-ordination activities of a group of scientists. He was made assistant to the director of the G-E research laboratory in 1940.

READY FOR ph DETERMINATION

PLUG INTO ANY 110 VOLT A.C. OUTLET

The Cambridge pH meter is always "ready-to-go". It may be turned on continuously during the day so that it is available for pH measurements immediately without waiting through a warming-up period to obtain stability. Another feature of the *Cambridge* is the Electron-Ray Null Indicator. It permits quick, hairline adjustment and cannot be injured by hasty, inexperienced mis-manipulation.

Available in Laboratory and Industrial Models.

Send for Bulletin 901 E

CAMBRIDGE INSTRUMENT CO., INC.
3732 Grand Central Terminal, New York 17, N. Y.

Kneading Machines

Addition of many new improvements and range of types to the line of Struthers Wells Northmaster Kneading Machines has been announced by Struthers Wells Corp.

Available in laboratory, standard and heavy duty units from 0.12 up to 3600 gallons working capacity, these kneading machines meet the increasing demand for larger, stronger, more efficient types of precision mixing machinery, according to the manufacturer. They are engineer designed for performing the difficult mixing, kneading and processing operations on a wide range of materials from dry and moist powders to heavy plastic masses including natural and synthetic rubber. These high powered mixers are used for breaking down and developing high viscosity cements and coatings and for compounding fillers and other difficult materials in heavy plastic masses. When equipped with special serrations on blade edges and trough saddle these machines are adaptable to the mixing and shredding of cellulose, paper and other fibrous substances in fluid mediums or in combination with other materials.

All machines are equipped with anti-friction bearings, wide face precision cut gearing and totally enclosed mechanisms. Mixers may be equipped with jackets for heating or cooling the materials under treatment and mixing chambers may be constructed for operation under vacuum or pressure to meet special conditions.

The mixing elements are furnished with face angles and contours specially developed for processing any material. The mixing chambers and all parts in contact with materials under treatment may be constructed of any commercial metal or corrosion-resisting alloy which can be cast, welded and machined.

A new comprehensive 16-page bulletin gives complete details on Struthers Wells Northmaster Kneading Machines, including tables of standard sizes and capacities, mixing chamber and blade types, as well as complete construction data and available optional features. Copies may be obtained by writing this publication or direct to Struthers Wells Corporation, Northmaster Division, Titusville, Pa.

True Weight Readings

The only springless dial scale with a swivel head, every Kron scale assures the operator of a full, unobstructed view of the dial chart and dial indicator at all times. The swivel head device allows the dial head to be rotated freely and smoothly through a complete circle at the convenience of the operator, and does not affect the accuracy or efficiency of the dial mechanism in any way.

Many advantages and benefits are gained through the full use of this exclusive Kron scale feature. If the scale platform is loaded from the front, and the load is so high that it obscures part or all of the dial chart, the dial head can be swiveled completely around so that the operator can obtain a true reading from any position he chooses.

If the scale is used as an integral part of a conveyor line, the position or location of the scale is not limited, since the dial head can be swiveled to the most convenient angle to eliminate point-of-view differences. This exclusive swivel dial feature also permits two-man operation of any Kron scale — one man to continuously load and unload the platform from the front, while the other takes dial chart readings from the rear of the scale without interference from loading operations.

Kron Scales are available for weighing, counting, batching, testing, measuring. A catalog of models is available through the maker, the Yale & Towne Manufacturing Company, Philadelphia Division, Philadelphia 24, Pa.

Exporting Fundamentals

Columbia University announces the resumption of its University Extension courses on International Trade which were discontinued shortly after Pearl Harbor. For the Spring Session, beginning Monday, February 5, 1945, a course on "Fundamentals of Exporting" will be offered by Morris S. Rosenthal, who was a Lecturer at Columbia University for many years prior to his appointment as Assistant Director of the Board of Economic Warfare. Mr. Rosenthal has resumed his business connection in New York as Executive Vice President of Stein, Hall & Co., Inc., and Vice President of the National Council of American Importers.

The course on "Fundamentals of Exporting" will be given on Monday evenings at 5:50 to 7:30 o'clock, beginning February 5, 1945, and will deal with methods of marketing American products abroad and international trade techniques, including: contract terms, ocean transportation, marine and war risk insurance, customs regulations, foreign exchange, and the financing of international shipments. Consideration will also be given to the significance of international trade to American industry and to American international economic policy.

During the academic years 1945-1946, for which classes begin on September 27, 1945, a program of four one-semester courses on International Trade will be offered by Mr. Rosenthal. Details will be announced later.

New Car Puller

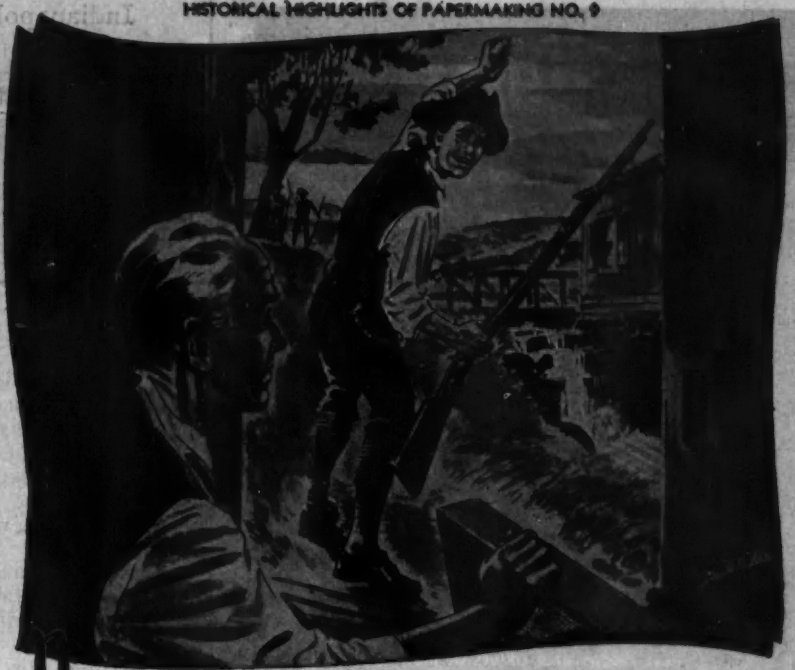
American Engineering Company, Philadelphia, manufacturer of Lo-Hed Electric Hoists, announces the introduction of their new Class 2½ Lo-Hed Car Puller — affectionately called the "One Man Gang."

The Lo-Hed Car Puller is a husky hauling device in which the barrel, gear box and motor are integrated in a single, streamlined unit. Starting line pull is 5000 lbs., using a single line, or more with various block combinations.

Uses of the car puller range from hauling railroad cars of all types to pulling skids, powering boat and airplane runways, dragging logs, bending pipe and numerous other back-breaking operations where imagination sees its possibilities.

Dimensions, features and applications for the Lo-Hed Car Puller are presented in a colorful folder just released, and available by writing to American Engineering Company, Philadelphia 25, Pa.

HISTORICAL HIGHLIGHTS OF PAPERMAKING NO. 9



Nathan Sellers...Needed for Essential Industry

Today, we hear a lot about essential industry. Back in 1776 practically the same situation existed. Prior to 1776 most papermaking machinery was imported from England. Consequently, with the Revolutionary War, importations stopped and America was faced with a paper famine. Most essential wartime need for paper was the wrapping of cartridges. Every available piece of paper, used or unused, was seized for this purpose.

Papermakers were forced to work with worn-out moulds. There was very little wire for repairs, and mechanics who could make moulds were rare indeed. In fact, there was only one in the country — a young fellow by the name of Nathan Sellers.

The skill of young Sellers was in constant demand . . . but one day he set aside his tools and enlisted in the Continental Army.

Papermakers were caught short. They tried repairing their own moulds, but it was no go. Finally, in desperation, they presented a petition to Congress — requesting the immediate discharge of Sellers. Congress granted Sellers' release, deeming him more essential to the nation as a mouldmaker than as a soldier.

☆ ☆ ☆ ☆

Today — expert wire weaving is just as vital to essential industry as anything you might name. But America is no longer dependent upon one man or foreign importations. Here at Cheney Bigelow we've been making mill essentials for well over 100 years. Right now, we're supplying the industry and our armed forces. We've pioneered in helping to make the United States the greatest paper producing country in the world.

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Efficiency
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OF
PAPER STOCKS
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Qualities which make these fine colors helpful to the paper maker are:
Permanent color
High tinting strength
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Light, acid and alkali proof
Soft texture—non-abrasive

MAPICO Yellows
Five standard shades—light to dark—yielding clean clear creams, ivories and buffs

MAPICO Reds
Rich deep reds which extended with white produce desirable shades of orchid, coral, pink

ALSO BROWNS AND BLACK
If you are unable to obtain all the Mapico pigments you desire, war-time restrictions are responsible.

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MAGNETIC PIGMENT DIVISION
MANUFACTURER

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Indianapolis Reports Low Stocks

INDIANAPOLIS, Ind., January 15, 1945—As the new year starts, the trade apparently is reconciled to the fact that it will stagger along on low stocks and large orders at least until the European war is over and the Government begins to easing restrictions.

Makers of paper board containers are faced with the proposition of having many of the gains they have made in packaging in the last few years taken from them. In spite of the supposed lack of metal, cans, glass and wood are beginning to be real competitors of many container corporations. Breweries are turning back to the wood container for their product. Much the same is true of the fruit and vegetable industry in this state. Egg cases are difficult to obtain and the dairy trade has returned practically en masse to the glass container, where three years ago, the waxed paper container was making strong inroads on the glass bottle. Local container factories continue to produce under serious handicaps. In spite of many inducements, the labor situation is grave and this coupled with the raw material shortage is hampering production.

Newsprint demand continued to full quota allowances. The central Indiana papers are turning down virtually as much advertising as they are able to accept. Prices were at ceiling levels.

Indications now are that demand for building paper and roofing will continue next year at about the level of the past, which was better than in 1943. There will be no resumption of new building on a large scale due to government restrictions, but in many communities priorities are being granted for the construction of small units to alleviate housing shortage. This is particularly true in the heavy defense plant areas.

Demand for waste paper continued heavy last week with no change in prices.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Donat Arseneau, laboratory assistant, Ste-Lawrence Paper Mills, Three Rivers, P.Q., Canada.

Joseph D. Clark, technical director, D. L. Ward Company, 401 N. Broad street, Philadelphia, Pa., a 1932 graduate of Syracuse University.

William H. Haverman, sulphite superintendent, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash.

Ralph C. Heys, director and chief engineer, Millspaugh, Limited, Vulcan Road, Tinsley, Sheffield, England, a 1924 graduate of Manchester College of Technology.

Edward McD. Jardine, managing director, James Brown & Co., Limited, Esk Mills, Penicuik, Midlothian, Scotland.

Arthur T. Parry, assistant mill manager, Jacksons Millboard and Fibre Company, Bourne End, Bucks., England.

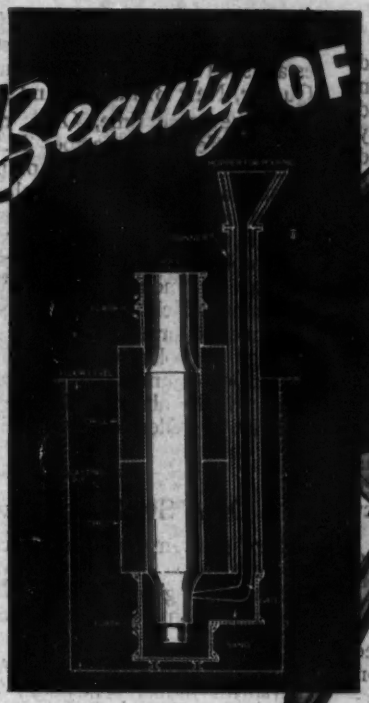
Edward L. Powell, chemical superintendent, Southern Chemical Cotton Company, Chattanooga, Tenn., a 1941 graduate of the University of North Carolina.

William B. Raymond, chemist, Brown Company, Berlin, N.H., a 1924 graduate of Bates College.

M. E. Sanford, resident manager, Fibreboard Products, Inc., Sumner, Wash., a 1929 graduate of the University of Washington.

Ray Smith, chief electrical engineer, Mead Corporation, Chillicothe, Ohio.

THE *Beauty* OF A CALENDER ROLL IS *MORE* THAN SKIN DEEP



The body of a calender roll is formed by pouring molten metal into an iron mold or chill. Iron being a good conductor of heat, cooling is rapid, causing the surface of the roll body to "chill" and harden. The body of the roll below the chilled surface cools slowly, forming a gray iron structure which gives strength to the roll. Sand molds are used for the necks, and, since sand is a poor conductor of heat, the metal becomes a gray iron composition with physical properties which make the necks strong, yet readily machinable.

The white iron skin or chilled surface of a calender roll varies in depth from 3/8 inch in small sizes to two inches in large diameter rolls. While this chill provides the roll with an extremely hard surface capable of taking a smooth, mirror-like finish, it is relatively brittle. The strength of the roll lies principally in the gray iron structure below the chill.

Hence, the "beauty" or excellence of a calender roll is in the combination of the depth and hardness of the chill and the strength of the gray iron body below it. The chill must be deep enough to give long service, but not too deep or there will be danger of breakage.

The accompanying diagram explains how the hard skin or chill is formed, but determining the correct relation between depth of chill and strength of roll can be learned only by experience — the kind of experience that Farrel has accumulated over nearly a century of casting, machining and grinding many thousands of different sizes and types of rolls in *America's largest specialty roll shop.*

Write for information about rolls, or for details of any of the products listed on this page.

FARREL-BIRMINGHAM COMPANY, Inc., ANSONIA, CONN.
Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles

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ROLLS: Chilled Iron, Dry Sand, Meehanite, Alloy Iron, Steel, Chromium Plated
FOR: Calender Stacks
Board Calenders
Super Calenders
Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
Coating Rolls
Creping Rolls
Plater Rolls
Cutting Rolls
Paraffining and Waxing Rolls
Saturating Rolls
Silicating Rolls
Miscellaneous Special Purposes
CALENDERS: Paper and Board
GRINDING MACHINES: Roll
CALIPERS: Roll
GEARS, CUT: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
SPEED REDUCING GEAR UNITS
SPEED INCREASING GEAR UNITS
FLEXIBLE COUPLINGS

Farrel-Birmingham

Reduces Imported Pulpwood Prices

Prices to United States importers will be reduced as much as $4 a cord on pulpwood produced in Quebec, New Brunswick and Nova Scotia and imported under contracts made on or before February 2, 1944, the Office of Price Administration announced January 13, 1945, in Amendment No. 4 to MPR-530.

The reduced prices will result from the extension to all pulpwood imported from these three Canadian provinces of the ceiling prices heretofore not applicable to imports contracted for on or before February 2, 1944.

The reductions will not occur in those instances where importers can show on pulpwood cut before January 18, 1945, effective date to today's action, that they are unable to import the contract wood at the existing ceilings. Provision is made for individual applications to be filed by such importers for permission to pay up to the contract prices. No applications can be filed, however, on imported wood cut after January 18, 1945, regardless of any previous contract prices.

Today's action is taken after consultation with the industry and at the request of the War Production Board and the Canadian Timber Controller. A large segment of the industry approved the action.

By having all pulpwood imported from these three provinces subject to the same ceilings, the importation of this pulpwood into the United States will be encouraged and stabilization of prices will be promoted, the War Production Board and the Canadian Timber Controller have advised OPA.

Heretofore, those importers with pre-February 2, 1944, contracts could buy the pulpwood at prices above the ceilings established for non-contract wood, causing dislocation in the industry. Ceilings were first established May 1, 1944, on pulpwood imported from Quebec, New Brunswick and Nova Scotia.

At the same time, OPA revoked an action that became effective December 26, 1944, which exempted from price control sales of pulpwood to United States consuming mills by their wholly-owned subsidiaries in Quebec, New Brunswick and Nova Scotia. The subsidiaries are now made subject to the ceilings applicable to other sellers, but they may add to these ceilings an amount for administrative and overhead expenses which is reasonably necessary to permit continued operations. Where the pulpwood is sold through a broker or dealer, they may also add the prescribed commissions for such sales. Any increases made will be absorbed by the parent companies and will not be reflected in the prices of paper products, OPA said.

OPA Studying Newsprint Costs

Newsprint manufacturing costs are being studied to determine whether any change is required in present ceiling prices for this commodity, the Office of Price Administration announced on January 12, 1945.

Continuing this study, OPA officials met with the newsprint industry advisory committee on January 10 in New York to discuss the current price level for newsprint.

It was decided at this meeting to wait until fourth quarter of 1944 earnings of the industry are available to see if they indicate that a price change is necessary.

Inspect the MACHINE WORK of any Kennedy Valve

THE large Kennedy line includes bronze and iron body gate, globe, angle and check valves for low, standard, medium and extra heavy pressures. Each type has several "extra value" features that make Kennedys the best possible valve investment. Specify Kennedys on your next valve order and you will quickly see the advantages of standardizing on them. Obtainable at your local dealer.

NOTICE the smooth, true surfaces, accurate threading, clean finish, and perfect fit of all parts. Kennedy machinists are long-experienced, and the strictly modern automatic machine tools with which they are provided enable them to turn out flawless work.

The result—Kennedy Valves look trim and clean-cut; and, more important, they operate easily, close tightly, are readily taken apart and reassembled, and all parts are interchangeable.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

Steady Hands . . .

View of Kettle Room at Niagara Alkali Plant

NIAGARA has greatly expanded its facilities to meet the enormous war demands for electro-chemical products. Thus as we turn to meet the growing peacetime requirements we remain "steady hands" at the job of producing materials for which Niagara has won an outstanding reputation as a quality house. This is assurance of continued good service and improved quality to those old customers who have relied upon Niagara for many years. And to new customers it means confidence in obtaining the highest standards of quality and the most experienced technical cooperation in the postwar era when electro-chemical products will be in increasing demand.

Niagara ALKALI COMPANY

60 EAST 42nd STREET, NEW YORK 17, N. Y.

CAUSTIC POTASH • CAUSTIC SODA • PARADICHLOROBENZENE • CARBONATE OF POTASH • LIQUID CHLORINE

Increases Paper Board Prices

Manufacturers' ceiling prices for paper board made from waste paper or straw and sold east of the Rocky Mountains were increased by the Office of Price Administration on January 15, 1945, in Amendment No. 9 to Revised Price Schedule 23.

The increases, effective January 20, 1945, are $2 per ton, or the equivalent, on the waste paper grades of paper board, and the equivalent of $2.50 a ton on the straw board. Some grades are priced by the ton and some by the thousand square feet.

The paper board grades given increased ceilings are box board, tube stock, jute liner board, bogus corrugating material, container chip, and corrugating straw board.

Box and container manufacturers, who are the buyers of this paper board, must absorb today's increases as the action does not permit any change in the ceiling prices for paper board boxes or containers.

There are virtually no sales of these grades of paper board by wholesalers or retailers. The grades are used for either paper board boxes or containers or inner packing for those containers.

OPA said that the increases granted are the minimum necessary to make prices of manufacturers fair and equitable as required by law. Existing ceilings have been shown to be inadequate because of increased costs for materials and labor, the latter increase being largely for higher overtime rates, the agency said.

Recent increases in waste paper price ceilings and in straw prices have contributed to cost increases for these grades of paper board.

Other paper board grades continue at existing ceilings. These grades include kraft boards, weatherproof filler stocks, certain corrugating boards, and specialty boards.

Empire State Meets at Niagara Falls

The Niagara Falls Group of the Empire State Section held its first meeting at the Prospect House, Niagara Falls, N. Y., on Tuesday, January 9. About forty attended. B. J. Staneslow of Moore Business Forms, Inc., presided as chairman and outlined the aims of the new organization.

John Campbell of Moore Business Forms, Inc., introduced the speakers. The first speaker was R. G. Macdonald, Secretary-Treasurer of the Technical Association of the Pulp and Paper Industry, who gave a brief history of the founding of the TAPPI Sections and presented a review of vocational education programs carried on in several mills. The second speaker was R. N. Aston of the Mathieson Alkali Works who described the development work in process in treating Niagara River water with chlorine dioxide to remove the color and odor from drinking water.

Those present included: R. N. Aston, Fred Ayers, H. P. Bailey, W. E. Beazley, R. M. Billings, H. S. Bristol, M. A. Brown, Charles Y. Cain, Dr. John Campbell, J. Y. Carnie, F. Casciani, H. R. Davidson, W. Day, F. W. Decker, Vernon Eager, Merrill Eldridge, A. B. Gorman, Arthur C. Hayes, H. E. Karberg, E. J. Lawlor, F. R. Loppnow, R. G. Macdonald, John Materese, John Morrison, A. H. Nadelman, W. M. Orchard, Harold Peterson, James M. Reed, E. A. Rinell, Robert D. Rusch, P. M. Schaffrath, S. M. Scaletta, B. J. Staneslow, W. O. Stauffer, Gordon K. Storin, L. J. Walz and Vernon Woodside.

If you are dissatisfied with your sales in America's No. 1 Market, — the rich territory from Indiana east .... if you can use the services of a hard-hitting, experienced sales organization .... if you want to sell the IMPORTANT industrial and retail accounts .... investigate how we can solve your problem.

We provide a complete merchandising service, including warehouse facilities. Contact the nearest HUBBS HOUSE.

for a DISTRIBUTORSHIP that means LEADERSHIP

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PAPER
TRADE JOURNAL
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COMING EVENTS IN PAPER INDUSTRY

The American Paper and Pulp Association and affiliated organizations, The Technical Association of the Pulp and Paper Industry, and The National Paper Trade Association, because of war conditions, have cancelled their conventions which were tentatively arranged to be held in New York, February 19-22, 1945.

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

FIBROUS MATERIALS

The many heavy demands of the all-over military needs, Lend-Lease and the other requirements created by this war cannot be entirely met without denying the home front less than can be spared to maintain a strong civilian economy. The United States is by far the largest producer and consumer of pulp, paper and paper board in the world. Great as that capacity is, the lack of manpower available to maintain all the essential operations makes it impossible to manufacture all the paper that would be practicable under more favorable conditions. Pulpwood receipts have been maintained at a very high level under the difficulties of war conditions and all branches of the pulp and paper industry have established excellent records. The demand of war for manpower is, of course, the prime factor in all industries and there can be no satisfactory solution for the acute labor problem. We must do the best we can to meet the extraordinary and almost insatiable requirements of a total world conflict.

Supplies of fibrous raw materials for paper production has been maintained at a high level. Stocks in relationship to mill demand have, however, been slowly deteriorating for months. This is particularly true of waste paper. While collections have never very closely approached the quota set for this essential material, long and quite well sustained efforts of all have done much to increase the tonnage at the mills. Receipts of waste paper, up to November 1 averaged about 587,000 tons monthly, against a quota of 660,000 tons. Pessimism has been expressed as to the ability to maintain collections up to this average, the Department of Commerce reported, which points out that consumption has averaged about 578,000 tons monthly for the ten months of 1944. This has increased inventories from 250,000 tons on January 1, to 329,000 tons on November 1, 1944. The Department states that, "Increased military demands for pulp products will require more intensive waste paper collections to supplement virgin wood pulp so as to increase paper and paper board production for urgent military needs."

Paper board output for the ten months of 1944, of 7,541,000 tons, or 4.5% above 1943, was only possible because of the success of the paper salvage campaigns. In October, paper stock inventories were 32% above January 1944 and October 1943. Consumption for the ten months averaged approximately 48,000 tons more monthly over the average of 530,000 tons monthly in 1943. This, the Department points out, reflects strongly the increased need and utilization for waste paper. "The 'paper holiday' put into effect in some sections of the country, has brought unexpected gratifying results in increasing waste paper collections where this 'holiday' has rather forcefully brought home the urgent need for waste paper. The success of this campaign in increasing collections will no doubt gain momentum, until it could very likely be adopted on a nation-wide scale, instead of in just a small number of cities and rural communities, as at present."

The paper holiday was first tried in Peoria, Ill. Local merchants urged their customers not to ask for paper bags or wrappers (except for such commodities as cuts of meat), and the consumers cooperated by using shopping bags or carrying their purchases unwrapped. As a result, paper salvage in Peoria during July shot up 600% over its average for the months prior to the holiday. And, more important perhaps, the Department adds, it served to accentuate the paper shortage so successfully that Peoria's waste paper collections have increased steadily month by month ever since the holiday started. Since that time the WPB and the Periodical Publishers National Committee, which cooperate in helping to arrange the holidays, have induced more than 300 other cities to sponsor the plan. The two groups hope to have at least 1,000 communities staging paper holidays to save wrapping paper, bags, containers, etc. and in that way help reach the paper conservation goal of 1,000,000 tons for the past year. Of that amount, the two agencies estimated, more than a quarter must come from retail stores, where wrapping paper and paper bags have been acutely scarce for some months. For some time retail stores are getting only about 33% as many bags as they used before the war. In October, the holiday started in Boston, where some 1,000,000 shoppers carried unwrapped bundles for a week. More than 12,000 Massachusetts grocery stores took part in the drive to save paper bags and other wrapping materials, and the larger department stores in the city also pushed the campaign.

The Department of Commerce charted trend of the rag supply situation indicates a very slight increase in receipts during the fall months, but con-

sumption has overtaken receipts, while inventories started to decline sharply during the early days of September. Receipts of rags for the ten months of 1944 totaled 370,000 tons, compared with 341,000 tons for the same period in 1943, an increase of 8.5%. The supply of all other fiber, including bagasse, only reported in 1944, totaled 832,000 tons, compared with 598,000 tons in 1943, an increase of 39.1%. Inventories of rags for the ten months aggregated 86,000 tons, compared with 68,000 tons in 1943, an increase of 26.7%. Other fibers totaled 393,000 tons in 1944, compared with 170,000 tons in 1943, an increase of 131.8%. Consumption of rags totaled 352,000 tons for the ten months of 1944, compared with 337,000 tons in 1943, an increase of 4.4%, while other fibrous materials increased to 832,000 tons, compared with 598,000 tons in 1943, a rise of 39.1%. As less and less civilian goods are being manufactured, the supply of high quality cotton cuttings is steadily deteriorating, and inadequate tonnages are being collected in unbleached and in new white shirt cuttings. A relatively abundant supply of old cotton rags is now available but this condition is not expected to continue. The roofing mills have now built up relatively high inventories and supplies of the roofing grades of old rags is not expected to remain so favorable when these consumers enter the market for large tonnages.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
Dec. 2	92.2	Dec. 4	92.2
Dec. 9	93.6	Dec. 11	88.9
Dec. 16	89.2	Dec. 18	89.9
Dec. 23	85.5	Dec. 25	68.6
Dec. 30	61.0	Jan. 1,'44	70.3
Jan. 6,'45	81.0	Jan. 8	90.2

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	91.9	*84.4*	88.4

COMPARATIVE YEARLY SUMMARIES

Year	1937	1938	1939	1940	1941	1942	1943	1944
Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	*88.4*

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96	85	96	92	95	95	*85*	93

Week ending Dec. 2, 1944—94 Week ending Dec. 23, 1944—94
Week ending Dec. 9, 1944—95 Week ending Dec. 30, 1944—57
Week ending Dec. 16, 1944—94 Week ending Jan. 6, 1945—80

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Hammermill Paper Co. Gets Award

[FROM OUR REGULAR CORRESPONDENT]

ERIE, Pa., January 15, 1945—State Defense Council, Harrisburg, has cited the Hammermill Paper Company to receive the national security award for maintaining superior protective measures in its plant.

Turn Back the Clock to 1920

Compare this view of Manhattan as it looked in 1920 with the way it looks today. Twenty-five years have made a difference... the city has moved forward... grown bigger...taller...and the story of its progress is etched in its skyline.

Organized in 1920, the Witco Chemical Company, too, has grown swiftly and steadily... from a small office with a personnel of four to a world-wide organization. Now entering its second quarter of a century with a list of more than 200 chemicals, oils, pigments, asphalts, and other products, Witco is prepared to meet the chemical requirements of a fast expanding industrial world.

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Witco Carbon Black No. 11 is a dustless, cleaner carbon black that disperses readily and evenly to impart a deep, rich tone to your black papers. It is more economical... gives finer, more uniform results and may be placed directly in the beater without removal from the bag.

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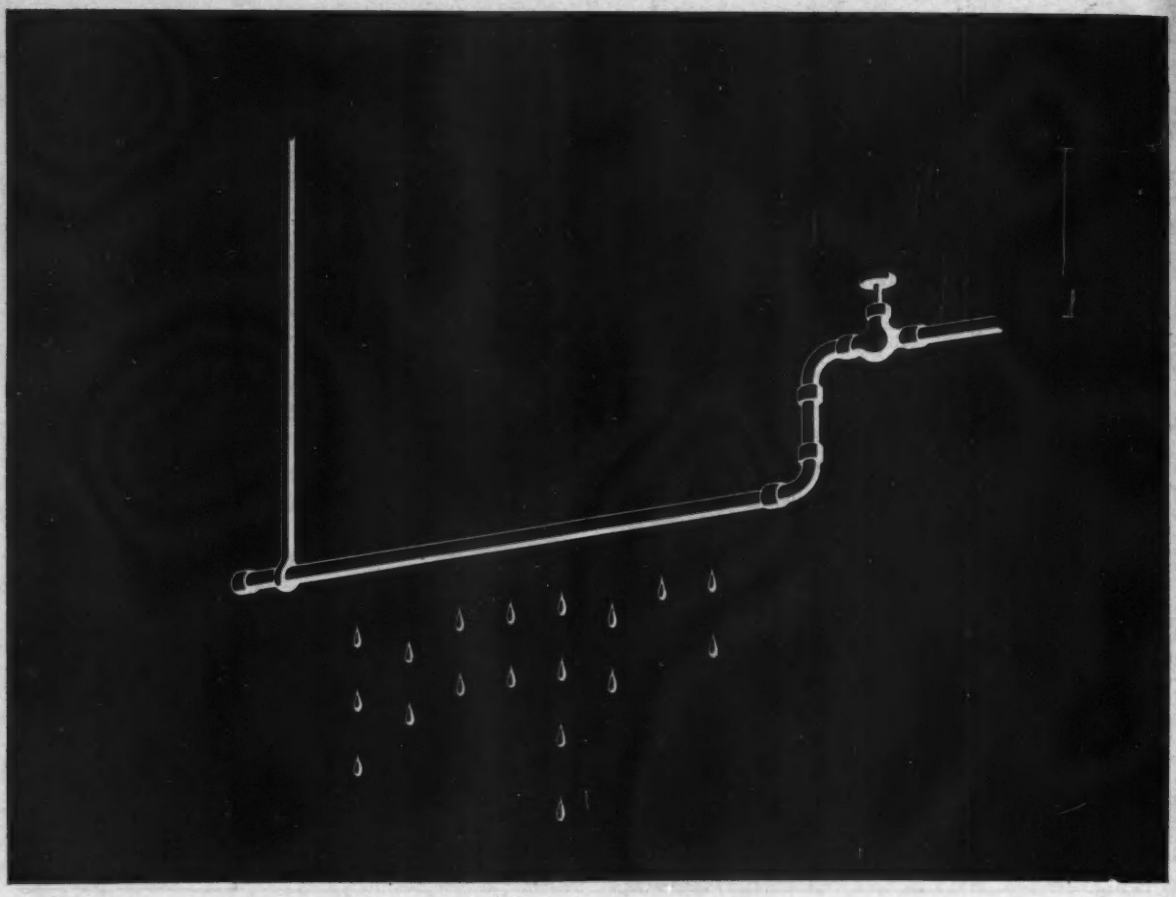

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All that is required to preserve laps in the average pulp mill is a gadget like that shown above: a perforated pipe, a control valve and a suspended tank to gravity-feed a solution of "Lignasan" on the sheets as they pass over the wet machine.

"Lignasan" contains *ethyl mercury phosphate*, one of the most powerful fungicides and bactericides known. It is extremely effective even in low concentrations against slime-producing bacteria, as well as fungi that cause pulp to rot. As little as 3 to 5 ounces per ton of fiber, dry basis, is usually sufficient to prevent growth of profit-stealing slime on the paper machine.

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A Study of the Cuprammonium Viscosity of Cellulose Using the Hoeppler Viscosimeter

By W. O. Hisey[1] and C. E. Brandon[2]

(Concluded from the issue of January 11, 1945)

Comparison of Hoeppler with TAPPI Standard Viscosity

COMPARISON OF ABSOLUTE VISCOSITIES:

Viscosity measurements were made on several different pulps using both the TAPPI Standard and Hoeppler methods. In many cases both glass and steel balls were used for the Hoeppler method. All tests were made using TAPPI standard cuprammonium solution. The results are given in Table XV. Ratios of TAPPI tests to Hoeppler tests were calculated for both the glass and steel spheres. The TAPPI tests averaged 7.5% higher than the Hoeppler tests with the glass sphere. Although there was considerable variation in the ratio, it seemed to be chance variation and the average for the high viscosities was about the same as for the low viscosities.

The ratio of TAPPI tests to steel ball tests seemed to increase somewhat with higher viscosities. In this case the TAPPI tests averaged 34.3% higher than the Hoeppler tests with the steel ball.

TABLE XV.—COMPARISON OF TAPPI STANDARDS AND FALLING SPHERE VISCOSITIES

Pulp	TAPPI Vis.	Hoeppler Vis.		Ratios	
		Glass	Steel	TAPPI Glass	TAPPI Steel
0.25% cotton	4.29	4.48	....	0.958	....
1% soda pulp	5.98	5.94	5.23	1.007	1.143
0.5% cotton	9.89	10.10	....	0.978	....
Paper C (1%)	16.52	13.6	11.7	1.215	1.412
Bleached kraft No. 6 (1%)	16.7	16.7	13.78	1.000	1.212
Bleached kraft No. 4 (1%)	18.9	16.35	14.07	1.156	1.343
Paper B (1%)	22.25	20.3	15.9	1.095	1.399
Bleached kraft No. 5 (1%)	22.78	19.45	15.64	1.171	1.455
Paper A (1%)	24.23	21.3	16.8	1.140	1.444
Sulphite (1%)	35.3	....	27.05	....	1.306
Unbleached kraft No. 1 (1%)	35.9	34.6	24.75	1.037	1.450
1% cotton	42.8	....	36.1	....	1.186
Unbleached kraft No. 3 (1%)	53.0	49.4	32.0	1.072	1.657
1.5% cotton	155.5	....	123.3	....	1.261

COMPARISON OF RELATIVE ACCURACY:

To compare the accuracy of the Hoeppler tests with the TAPPI standard tests, an attempt was made to calculate mean deviations of the TAPPI standard tests made. This was difficult as only two or three tests were made for each pulp or pulp concentration. The results are given in Table XVI.

There was a great variation in these mean deviations because only a few tests were made. For this reason the square root of the average square was probably more nearly correct than the arithmetic average. Although the resulting value of 4.68% was above the error permitted by the TAPPI standard method, the author was never able to get results to check consistently with TAPPI standard limits and felt that his value was a better representation of the true value of the mean deviation. The mean deviation of 4.68% for the TAPPI standard method compared with 2.15% for the Hoeppler viscosimeter showed that the Hoeppler viscosimeter is about twice as accurate as the TAPPI standard method.

Rate of Cellulose Dispersion

FACTORS AFFECTING THE RATE OF DISPERSION:

A study of the literature showed a marked difference of opinion as to how much time is necessary for the dispersion of cellulose. Reuben *(15)* gave 2 to 4 hours for bleached pulps, longer for unbleached;

TABLE XVI.—MEAN DEVIATIONS OF TESTS BY TAPPI STANDARD METHOD

Pulp	Pulp Concentration %	Mean Deviation %
Cotton	0.25	3.26
Cotton	0.5	.70
Cotton	1.0	.21
Cotton	1.5	6.85
Soda	1.0	1.34
Sulphite	1.0	.00
Unbleached kraft No. 1	1.0	5.60
Unbleached kraft No. 3	1.0	7.20
Bleached kraft No. 4	1.0	.60
Bleached kraft No. 5	1.0	8.70
Bleached kraft No. 6	1.0	5.70
Paper A	1.0	4.80
Paper B	1.0	.50
Paper C	1.0	5.60
Average		3.64
Square root of average square		4.68

An abstract of a thesis presented to the New York State College of Forestry in partial fulfilment of requirements for the degree of Master of Science.

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Barber and Minor *(1)* said that 5 hours was long enough for any 0.5% dispersion. Kung *(12)* used the TAPPI standard method and claimed solution of bleached pulps in 30 minutes and unbleached pulps in 60 minutes. Werner *(22)* claimed dispersion in 45 minutes while Fabel *(5)* used a special shaking device and claimed solution in 1 hour. Brauns *(2)* shook his solution by hand and said that if properly done, it would dissolve in 2 or 3 minutes.

Many of the authors did not state copper concentration or speed of rotation on the wheel. Joyner *(11)* noticed that at higher copper concentrations the cellulose had a tendency to form a gel and did not dissolve so rapidly as at lower concentrations. He recommended 13 grams per liter for 2% cellulose solutions. Schuetz, Klauditz, and Winterfeld *(17)* used a solution in which the copper concentration was only 8 grams per liter and claimed solution in 5 to 10 minutes. Their ammonia concentration was 150 grams per liter. They always continued the dispersion for 15 minutes to insure complete solution. They rotated the tube containing the solution and two or three steel balls of 10 mm. diameter at a speed of 30 r.p.m.

It was desirable to investigate further the effect of various factors on the speed of dispersion. Since it seemed that the viscosity was constant at any time after no visible particles were left in the solution, the minimum dispersion time for each method was determined by examination of the solution. Several solutions were examined for each dispersion method and the maximum time at which particles were still visible and the minimum time when all were dispersed were recorded. Since the dispersion time depended somewhat on the way the cotton was placed in the tube, often the minimum time showing complete dispersion of one solution was less than the maximum time showing incomplete dispersion of another solution. This was especially true at the higher pulp concentrations.

From these various data the best figure for the average minimum time for complete dispersion was selected. Effect of pulp concentration, copper concentration, ammonia concentration, and wheel speed were examined. All results are given in Table XVII.

Effect of Pulp Concentration on Rate of Dispersion:

Pulp concentration seemed to be one of the most important factors affecting speed of dispersion. The time necessary for dispersion seemed to be almost directly proportional to the pulp concentration for concentration above 0.5%. The increase in time for 0.25 to 0.5% was not so great but the higher concentration did require a somewhat longer dispersion time. The average estimated minimum dispersion time for all solutions and wheel speeds as well as the ratio of time to pulp concentrations were as follows:

Pulp Concentration %	Minimum Dispersion Time (min.)	Time/ Concentration
0.25	26	104
0.5	31	62
1.0	74	74
1.5	102	68

Effect of Copper Concentration on Rate of Dispersion:

Copper concentration also affected the rate of dispersion. If a high copper concentration was used, the cellulose quickly formed into masses of jellylike particles. Since the surface area per unit volume of these particles was much less than that of the original cellulose fibers, the dispersion was much slower. As the copper concentration decreased, the tendency to form these jellylike particles decreased and therefore the rate of dispersion increased even though the rate of solution per unit area was probably lower than at the high copper concentrations. The ratio of copper to cellulose must not be too small or the cellulose will not dissolve, Joyner giving the minimum as 1 gram copper to 2.3 grams cellulose. This would have required only 1.1 gram per liter of copper to disperse 0.25% pulp while 5 grams per liter should have easily dispersed 1.0% pulp. In this study copper concentrations below 10 grams per liter were not investigated.

The average minimum dispersion times for all four pulp concentrations with variable copper concentration but constant ammonia concentrations were as follows:

Copper Concentration grams per liter	Minimum Dispersion Time, min.
10	40
15	66
20	77
22.4	80

TABLE XVII.—EFFECT OF VARIABLES STUDIED ON MINIMUM DISPERSION TIME

Copper Conc. g./l.	Ammonia Conc. g./l.	Wheel Speed r.p.m.	Minimum Time Necessary for Dispersion (min.) 0.25% pulp	0.5% pulp	1.0% pulp	1.5% pulp	Average
10	200	3.3	10	10	50	90	40
15	200	3.3	25	30	90	120	66
20	200	3.3	40	70	100	100	77
22.4	200	3.3	30	45	110	135	80
15	225	3.3	30	40	100	90	65
15	200	3.3	25	30	90	120	66
15	175	3.3	40	30	105	135	77
15	150	3.3	25	40	60	150	69
15	200	3.3	24	30	90	120	66
15	200	9.3	40	20	45	95	50
15	200	18.5	15	10	30	30	21
15	200	29.4	5	15	15	40	19
Average			26	31	74	102	
Time/concentration ..			104	62	74	68	

Effect of Ammonia Concentration on Rate of Dispersion:

Ammonia concentration does not seem to affect the rate of dispersion at lower pulp concentrations. However, at a pulp concentration of 1.5%, higher ammonia concentration gave a somewhat more rapid dispersion.

Effect of Wheel Speed on Rate of Dispersion:

Increase in wheel speed increased the rate of dispersion. The average minimum dispersion times for the various wheel speeds were as follows:

Wheel Speed r.p.m.	Minimum Dispersion Time, min.
3.3	66
9.3	50
18.5	21
29.4	19

Special Methods for Dispersing and Testing

Methods for Eliminating the Effect of Air:

Several references were made in the literature to special methods designed to eliminate the effect of air. Schuetz, Klauditz, and Winterfeld *(17)* introduced about 0.5% sodium hydro-sulphite ($Na_2S_2O_4$) to the cuprammonium solution and claimed to obtain the same result as if the tests were made over nitrogen. They reported rapid dispersion and an accuracy of 2%.

Doering *(4)* considered this method too complicated, and said that the addition of hydro-sulphite or other reducing agents caused the ratio of the

cupricion to the cuprousion to be altered and therefore the composition of the cuprammonium solution and its viscosity to be changed. Instead of hydrosulphite he added pieces of copper, weighing about 1.5 grams each which he cut from a copper wire of 5 mm. diameter. These were cleaned in hydrochloric acid and served the dual purpose of agitating the solution and minimizing the effect of the air on the solution. He used a copper concentration of 13 grams per liter and ammonia concentration of 200 grams per liter. He shook the mixture by hand for 5 minutes and claimed complete dispersion. The solution was then poured into the tester. The brief contact with air was not harmful.

USE OF COPPER TO ELIMINATE THE EFFECT OF AIR:

It was desirable to investigate Doering's methods, so a few tests were made using pieces of copper for dispersing. Small pieces cut from ¼-inch copper tubing were used and the samples were shaken by hand either in a large test tube or in a 50 ml. Erlenmeyer flask. Cuprammonium solution containing 10 grams per liter copper and 200 grams per liter ammonia was used for the tests. The results confirmed the work of Doering.

With a 1.0% concentration of cotton which gave a viscosity of 37.5 cp. by the regular method, three tests were made by the simplified method. The first was shaken in a large test tube having a large air space over the solution. No copper pieces were added. This gave a viscosity of 19.8 cp. indicating that the air had a large degrading effect. In the next test the same test tube was used with the same large quantity of air but with copper pieces added. This gave a viscosity of 29.8 cp. showing the benefit of copper. However, since the air quantity was too high, the viscosity was still somewhat low. A third test was tried in an Erlenmeyer flask again using pieces of copper. This time only about 5 cc. of air space was left above the solution. This viscosity was 37.9 cp. as compared to 37.5 cp. by the regular method indicating that the air had no bad effect. In all cases there was a slight drop in viscosity during the first two or three falls after which it became very constant. The first three falls were omitted in the calculations of viscosity. Each solution was shaken 10 minutes for dispersion.

Four tests were made using 0.25% concentration of cotton in the Erlenmeyer flasks. By the regular method this solution gave a viscosity of 4.162 cp. Three tests were made in which pieces of copper were added and the solution shaken 10, 5, and 5 minutes, respectively. Each solution stood one minute to deaerate. The viscosities obtained were 4.36 cp., 4.50 cp., and 4.41 cp. In the first test there was a slight "viscosity rise" but in the other two there was a slight decrease in viscosity on successive tests. Although all three of these tests were a little high, they checked about as closely as tests made by the regular method and were much simpler. Since the solution was poured into the tester and required only 5 minutes to disperse, the entire test required less than 30 minutes. If only the first fall were needed, the test could be completed in about 10 minutes.

USE OF AMMONIUM HYDROXIDE-PRESOAK TO SPEED UP DISPERSION

Several methods have been devised recently in which the pulp is soaked in ammonium hydroxide before dissolving. Nikitin *(12a)* treated the pulp with 20% ammonium hydroxide for 3 minutes and with Schweitzer's reagent for 10 minutes and claimed the solution to be complete. Prawdin *(14)* used much the same method, but shook the pulp with the cuprammonium only 5 minutes.

Rich *(16)* developed a method which he claimed could be used as a control test. He dried the pulp with acetone, took 3.5 grams of pulp and treated for one minute with 75 ml. of ammonium hydroxide. He then added 100 ml. of cuprammonium solution containing 40 grams per liter copper and 167 grams per liter ammonia. This gave a final copper concentration of 22.8 grams per liter. After treatment with cuprammonium for only one minute, he ran viscosity by the falling ball method using aluminum balls.

For the present study, two tests were made with 1.0% cotton in which 25 ml. of ammonium hydroxide containing 200 grams per liter of ammonia were added to the cotton. This was shaken up thoroughly and then 25 ml. of cuprammonium solution containing 20 grams copper and 200 grams ammonia per liter were added and the mixture shaken. Copper pieces were added to reduce the effect of air. Although the solution was somewhat faster than when using the regular method with 10 grams copper per liter, there was a very decided drop in viscosity for the first few tests. This drop was observed in previous tests in which copper was used for dispersing but it was not so great as when the cotton was treated with ammonia first.

The two tests gave viscosities of 46.6 cp. and 46.7 cp. as compared to 37.5 obtained on a solution with the same pulp, copper and ammonia concentration but dispersed by the regular method. Apparently the treatment with ammonium hydroxide caused high viscosities but gave reproducible results.

Summary of Results

USE OF THE HOEPPLER VISCOSIMETER FOR MEASURING CUPRAMMONIUM DISPERSION OF CELLULOSE

The Hoeppler viscosimeter is quite satisfactory for measuring the viscosity of cuprammonium dispersed cellulose. Its chief advantages are:

1. A lower pulp concentration can be used than that used in the A. C. S. Standard Falling Ball Method.
2. The large balls used in the Hoeppler tester make it easy to determine the falling time.
3. The same solution may be tested several times which increases the accuracy. This cannot be done in the TAPPI standard method.
4. The tests made with the Hoeppler viscosimeter apparently have an error about half as great as tests made by the TAPPI standard method.

The chief disadvantages of the Hoeppler Method are:

1. The dispersion must be made in another tube and transferred to the tester.
2. When the glass ball is used, there is a "viscosity rise" on succeeding falls which greatly reduces the accuracy of the tests. This is not present when the steel ball is used.

ACCURACY OF THE HOEPPLER VISCOSIMETER

Statistical methods were used to calculate the accuracy of the instrument and to determine the relative accuracy of different dispersion methods and measuring techniques used. The maximum error was taken as that error which would be exceeded by chance only one time in 22. Instrumental error is the error of the instrument in the measurement of one solution. Overall error is the error expected when the errors of making the solution are also included.

The results of the calculations were as follows:

1. The maximum instrumental error for an average of five falls using the steel ball is about 0.4%.
2. When the effect of "viscosity rise" is eliminated, the maximum instrumental error for an average of five falls when using the glass ball is about 0.6%.
3. When the effect of "viscosity rise" is not eliminated, the maxi-

mum instrumental error for the average of five falls when using the glass ball is 1.8 and 2.2% for the 0.5 and 0.25% pulp concentrations, respectively.

4. If all other conditions are held constant and the first five falls always used, the maximum instrumental error when using the glass ball is reduced to 0.76%.

5. When all testing conditions are carefully standardized, the maximum overall error for the average of five falls is 1.8% when using the glass sphere and 2.2% when using the steel sphere. If conditions are varied the error is much larger.

6. The higher the pulp concentration, the higher the overall error in the test.

7. Change in copper and ammonia concentrations do not greatly affect the accuracy of the tests although lower copper concentrations seem to give somewhat more reproducible results.

8. Increase in dispersion time beyond the minimum has no effect on the accuracy of the results.

9. When using the glass sphere, the first fall gives much more reproducible results than the last fall and is even a little more accurate than the average of five falls.

Effect of Variables on Absolute Viscosity

The changes in viscosity caused by variation in wheel speed, dispersion time, copper concentration, ammonia concentration and pulp concentration were studied with the following results:

1. Increase in wheel speed causes no change in viscosity.

2. Increase in dispersion time beyond the point of visible dispersion causes very little change in viscosity, although the tendency is toward a slight drop.

3. An increase in copper concentration causes a slight increase in absolute viscosity but no change in relative viscosity for pulp concentrations under 1.0%. For pulp concentrations over 1.0% increase in copper concentration causes a decrease in both absolute and relative viscosity. At 1.5% pulp concentration this change is 1.32% per gram change in copper concentration.

4. Increase in ammonia concentration causes little change in viscosity at 0.25% pulp concentration but does cause a decrease in viscosity at all higher pulp concentrations. The higher the pulp concentrations, the greater the decrease in viscosity.

5. Increase in pulp concentration gives an increase in viscosity. This increase is about 3 to 3.5% for an increase of 1.0% in pulp concentration.

Other points noted in the study of the effect of variables on viscosity were:

1. The specific gravity of 0.96 given in the TAPPI standard method should be only 0.945.

2. The tolerance of ± 10 grams per liter for ammonia concentration specified in the TAPPI method is too large, for at 1.0% pulp concentration this represents a possible error of 7.8% viscosity.

3. The tolerance of ± 0.2 grams per liter for copper concentration is smaller than is necessary since this represents an error of only 0.1% at a pulp concentration of 1.0%.

4. The effect of changing copper and ammonia concentrations would be very small if a pulp concentration of 0.25% and an ammonia concentration of 175 grams per liter were used.

Rate of Dispersion and Minimum Dispersion Time

The following variables were found to affect the rate of dispersion of the cellulose:

1. Increase in wheel speed causes a more rapid dispersion.
2. Decrease in pulp concentration causes a more rapid dispersion.
3. Decrease in copper concentration causes a more rapid dispersion.
4. Change in ammonia concentration has little effect on speed of dispersion.

In this study the most rapid dispersion by regular methods was that of 5 minutes obtained when using a wheel speed of 29.4 r.p.m., a pulp concentration of 0.25%, and TAPPI standard cuprammonium solution. High wheel speeds were not tried with other cuprammonium solutions but a solution containing 10 grams per liter copper should have given a still faster dispersion.

Some special methods were tried to disperse the cellulose quickly without the use of inert gases. The results of these tests can be summarized thus:

1. By filling the tube completely as is done in the TAPPI method and then transferring by the use of air pressure, tests can be made without the use of inert gases. The results check those obtained by the more complicated method.

2. When pieces of copper are added to the mixture, a small air space has no degrading effect. Solution may be obtained in less than 5 minutes even with 1.0% pulp. The sample may be poured into the tester but still give very reproducible results.

3. When the pulp is presoaked in ammonium hydroxide, the solution is somewhat faster but not enough to justify the extra work required.

Comparison of the Hoeppler and TAPPI Methods

A comparison of the absolute viscosity obtained by the two methods showed considerable variation with the TAPPI method. On the average, the TAPPI method gives results 7.5% above the tests made with the glass sphere and 34.3% above those made with the steel sphere in the Hoeppler instrument. The difference is probably caused by the plasticity of the solution.

The accuracy as determined by calculations of mean deviation showed the Hoeppler method to be more accurate than the TAPPI method.

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Hold Joint Meeting at Kalamazoo

The tenth annual joint meeting of the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry and the Michigan Division of the Superintendents Association was held at the Park American Hotel, Kalamazoo, Mich., on Thursday, January 11, 1945. E. B. Taylor and J. L. Waber were joint chairmen and M. D. Bardeen, President of the Lee Paper Company was toastmaster. More than 300 attended.

Brief talks were given by Ray Barton, President of the Superintendents Association, R. G. Macdonald, Secretary-Treasurer of the Technical Association of the Pulp and Paper Industry, Ralph Hayward, President of the Kalamazoo Vegetable Parchment Company, Norman Weil, W. S. Tyler Company, L. W. Sutherland, Mayor of Kalamazoo and A. B. Milham, President of the Bryant Paper Company.

The principal speaker was E. W. Tinker, Executive Secretary of the American Paper and Pulp Association who talked on "Prospects of the Paper Industry for 1945."

J. A. Quinlan Heads Shippers

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, January 15, 1945—J. A. Quinlan, traffic manager of the St. Regis Paper Company and Taggart Corporation, New York, was elected president of the Atlantic States Shippers advisory board at a meeting here last week.

Others elected were E. L. Hoag Jr., assistant to the chief engineer of Cramp Shipbuilding Company, Philadelphia, first vice president; S. R. Moyer, general traffic manager of International Salt Company, Scranton, Pa., second vice president; Charles R. Seal, general secretary of the Baltimore Association of Commerce, director, and D. R. Crossley, Joe Lowe Corporation, New York, sergeant at arms.

High-Yield Sulphate and Soda Semichemical Pulps from Selected Southern Hardwoods and Southern Yellow Pine for the Production of Paperboards

By Mark W. Bray[1] and J. Stanley Martin[2]

Abstract

Seven southern hardwoods of widely different physical and chemical characteristics and a sample of southern yellow pine for comparison have been reduced at the Forest Products Laboratory to pulps of high yield by the sulphate and the soda semichemical processes. For these experiments the customary pulpwood chips were digested with about one-half the total chemicals, at about half the concentration, as commonly employed in the commercial operation of the sulphate process. As a result, the chemicals were almost completely consumed, and a high-yield product requiring disintegration and further refinement was obtained. These high-yield pulps were satisfactorily fiberized and refined either in a Bauer mill or in a beater and made into board suitable for corrugating. The sulphate semichemical pulps were higher in strength than those made from the same species with caustic soda alone. The sulphate semichemical pulp made from the less-dense hardwoods had considerably higher strength properties than that made from the southern yellow pine. The nine-point corrugating boards made on the laboratory fourdrinier machine had satisfactory strength properties, comparing favorably with commercial pine groundwood, chestnut chip, and straw corrugating boards.

Introduction

With the present pulpwood shortage, the pulp and paper industry is now confronted with the problem of producing sufficient quantities of new pulp to meet the exigencies of a wartime economy. A more effective utilization of the present wood supply through the application of high-yield pulping methods, especially to high density species, should materially help in alleviating this situation. Semichemical pulping methods, which result in high yields of pulp and therefore in an increased utilization of the hardwoods, or broadleaf species, offer possibilities in this direction. There is a limit, of course, to the degree of rawness to which a pulp can be made for the satisfactory production of certain grades of papers. Nevertheless, for the manufacture of paperboards, such as corrugating board, it is possible to use these high-yield pulps, especially those made from the hardwoods, which are well adapted to semichemical pulping methods.

Even though hardwoods present more wood-cutting, barking, and handling problems than the softwoods, or conifers, there are several reasons why they should be given more serious consideration for use in pulping at this time than they have received in the past. Hardwoods are plentiful in the forests east of the Rocky Mountains where they dominate much of the forested area and create silvicultural as well as forest management problems. In addition, many of the hardwoods are high in density and therefore result in high yields of pulp per unit of volume and per unit of digester space.

The Forest Products Laboratory has, for a number of years, done considerable detailed work to demonstrate the possibility of pulping hardwoods by the several modifications of the semichemical process as well as by other processes. Heretofore, much of the experimental work on the semichemical process has involved the use of either acid or neutral sulphite cooking liquors. In fact, with the exception of blackjack oak, all the species discussed here were pulped with both of these types of cooking liquors *(1)*, and, in addition, equal portions of these hardwoods with Southern yellow pine were pulped by the sulphate process for the production of liner boards *(2)*.

The present article is concerned with additional experiments with the semichemical process using the more strongly alkaline liquors of the sulphate and soda processes.

Description of the Wood

The several species employed in this investigation were: black willow *(Salix nigra)*, southern cottonwood *(Populus deltoides virginiana)*, American elm *(Ulmus americana)*, sugarberry *(Celtis laevigata)*, green ash *(Fraxinus pennsylvanica lanceolata)*, bitter pecan *(Hicoria texana)*, blackjack oak *(Quercus marilandica)*, and one of the southern yellow pines. With the exception of the blackjack oak, which came from Sharp County, Arkansas, the hardwood species were logged in Phillips County, Arkansas. This region of the delta supports almost pure stands of bottom-land hardwoods. The yellow pine was obtained in the vicinity of Bogalusa, Louisiana. Physical properties and chemical analyses of these species are recorded in Table I.

All the samples were classed as young growth wood and, with the exception of the blackjack oak, were of comparatively rapidly grown stock. Outstanding in these respects were the samples of black willow, and cottonwood, which, although twice the

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[2] Member TAPPI; Associate Engineer, Forest Products Laboratory,[3] Forest Service, United States Department of Agriculture.

[3] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

age, were comparable in growth rate to the southern yellow pine. The green ash, sugarberry, and pine contained no heartwood. As shown in Table I, the diameter of some of the logs was somewhat larger than those commonly used for pulpwood.

Two of the species, black willow and southern cottonwood, represent diffuse-porous woods; the others, with the possible exception of bitter pecan, a borderline case, represent ring-porous woods. The southern yellow pine, on the other hand, is nonporous. Since, among the physical properties of these samples, the greatest variation occurred in the density of the woods (23.5 pounds per cubic foot for black willow and 39.6 pounds for blackjack oak), the species are arranged in Table I in the ascending order of their density to facilitate comparison.

In addition to the variation in the density of the woods, the data in Table I show that some of the species differed considerably in chemical composition. This is particularly noticeable in their cellulose content, which, in general, varied indirectly with their density from 54% for green ash to 63% for cottonwood. Sugarberry and green ash were low in alpha-cellulose, whereas the others, especially the lighter woods, had fairly high alpha-cellulose contents. Except for the low lignin content of sugarberry, this constituent increased as the density of the wood increased. The pentosan contents were high in all the hardwoods in comparison to that of the pine, especially that of sugarberry. Sugarberry and green ash were higher than the other species in materials soluble in hot water and in 1% caustic soda solution. The ether solubility of all the hardwoods was low, while their caustic soda and hot water solubilities were high in comparison with the pine.

Description of Experiments

Usually in the operation of other modifications of the semichemical process such as that employing neutral sodium sulphite cooking liquors, the chips are merely impregnated with the cooking liquor, and excess liquor not absorbed and retained by them is returned to tanks for fortification and reuse. In these experiments, however, where soda and sulphate liquor were used, the chips were charged with a definite volume of cooking liquor, all of which was allowed to remain in contact with the chips for the duration of the cooking period, just as in the commercial operation of these processes.

The sulphidity of the cooking liquors for all the sulphate digestions was 33.9% which corresponds to a 2 to 1 ratio of caustic soda and sodium sulphide, respectively. The initial concentration of the chemicals in the cooking liquor (including moisture in the wood) was 25 grams per liter except for digestions of American elm (digestion No. 2556) and blackjack oak (digestion No. 2517), where the concentrations were 30 and 40 grams per liter, respectively. The total weight of the chemicals (calculated as caustic soda and sodium sulphide for the sulphate cooks and as caustic soda for the soda cooks) charged per 100 pounds of moisture-free wood was 10 pounds; thus the sodium oxide content was 7.82 and 7.75 pounds, respectively, for the sulphate and the soda digestions. By using these low concentrations and a low chemical-wood ratio, high-yield pulps of the semichemical type were obtained.

The digestions were made in a tumbling-type digester with a capacity of 14 cubic feet, which was heated indirectly by a surrounding steam jacket. The customary 5/8-inch chips, which had been prepared in a 48-inch diameter chipper, were used. A linear temperature-increase schedule was employed to raise the temperature of the digester from about 30°C. to the maximum cooking temperature of 170°C. in 1.75 hours, where it was held for a period of 1.5 hours.

After cooking for the prescribed time, the chips were dumped from the digester and washed. With the exception of the blackjack oak, they were then fiberized in a Bauer mill prior to conversion to nine-point corrugating board on the laboratory fourdrinier machine. The cooked blackjack oak chips were fiberized and processed in a beater to illustrate the possibilities of using this type of equipment as well.

The chemical composition of the fiberized pulps and their physical properties are recorded in Table II.

Discussion of Results

The data showing the cooking conditions and the results of the pulping experiments are recorded in Table II; the strength properties of the nine-point corrugating boards made from the pulps are recorded in Table III.

As would be expected in cooking under the conditions chosen, the chemicals were almost completely consumed in each digestion, and high pulp yields were obtained from all the woods tested. Although, as previously shown, the species differed considerably

TABLE I.—PHYSICAL AND CHEMICAL CHARACTERISTICS OF SEVEN SELECTED SOUTHERN (ARKANSAS) HARDWOODS AND SOUTHERN (LOUISIANA) YELLOW PINE (AVERAGE VALUES)

Wood		Physical Properties					Chemical Analyses							
												Solubility in		
Species	Shipment, No.	Diameter, In.	Age, Yr.	Growth Rate, Rings per In.	Density,[1] lb.	Heartwood, %	Cellulose, %	Alpha Cellulose, %	Lignin, %	Total Pentosans, %	Alcohol-Benzene, %	Ether, %	1% NaOH, %	Hot Water, %
Southern yellow pine	1554	7.2	13	3.8	29.3	None	59.4	43.8	27.8	11.5	2.2	1.2	9.5	1.9
Black willow (*Salix nigra*)	1549	15.5	28	3.7	23.5	36.9	61.6	46.6	21.9	18.8	2.2	.3	17.4	3.6
Southern cottonwood (*Populus deltoides virginiana*)	1548	13.0	27	4.1	23.7	43.4	63.2	46.5	23.6	19.0	1.8	.4	15.4	2.0
American elm (*Ulmus americana*)	1550	13.7	56	8.2	29.3	21.6	58.3	46.9	24.3	18.1	2.6	.4	16.7	3.6
Sugarberry (*Celtis laevigata*)	1545	9.9	47	9.5	30.5	None	54.4	40.2	20.8	21.6	3.1	.3	22.7	6.4
Green ash (*Fraxinus pennsylvanica lanceolata*)	1546	10.2	46	9.2	32.4	None	53.7	41.0	25.3	16.5	5.5	.5	18.4	6.8
Bitter pecan (*Hicoria texana*)	1547	22.7	88	7.9	36.6	30.9	55.8	44.4	25.1	19.2	3.6	.5	16.4	4.6
Blackjack oak (*Quercus marilandica*)	1508	5.6	48	17.1	39.6	45.8	56.6	43.9	26.3	20.1	3.5	.6	15.0	4.7

[1] Moisture-free weight per cubic foot green volume.

TABLE II.—RESULTS OF PULPING SELECTED SOUTHERN HARDWOODS AND SOUTHERN YELLOW PINE BY THE SULPHATE AND SODA SEMICHEMICAL PROCESSES

Digestion No.	Species	Wood: Shipment No.	Wood: Moisture Content, %	Wood: Weight: Moist, lb.	Wood: Weight: Moisture-free, lb.	Cooking[1] and Yield Data: Chemicals Charged: Concentration: NaOH, g./l.	NaS, g./l.	Total, g./l.	Total Na_2O, g./l.	Total Effective Alkali as NaOH, g./l.	Per 100 Pounds Moisture-free Wood: NaOH, lb.	NaS, lb.	Total, lb.	Total Na_2O, lb.	Total Effective Alkali as NaOH, lb.	Chemicals Consumed: Ratio of Combined to Total Alkali, %	On Moisture-free Wood, %	Total Effective Alkali as NaOH, %	Black Liquor Density at 15° C., °B.	Total Yield[2] of Moisture-free Pulp, %	Interpolated test-beater strength data on unbleached pulp. Tests made at 72° F. and 65 per cent relative humidity (Ream size 25 × 40—500): Freeness (Schopper-Riegler), Min.	Time of Treatment, Min.	Bursting Strength, Points per lb. per ream	Tearing Resistance, Grams per lb. per ream	Tensile Strength, Pounds per sq. in.	Density, g. per ml.	Color of unbleached pulp Ives readings: Red, Parts	Green, Parts	Blue, Parts	Chemical Analysis: Cellulose: Total, %	Alpha, %	Lignin, %	Total Pentosans, %	Chlorine Number (Roe), %	Ash, %
SERIES I. SULPHATE SEMICHEMICAL PROCESS																																				
2557	Black willow	1549	16.7	132.1	110.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	99.0	9.9	8.3	5.6	77.5	710	0	0.67	1.2	4397	0.61										
																					700	2	.68	1.2	4600	.61	25	17	14	79.0	65.4	16.8	14.0	19.2	1.4
																					550	24	.84	1.1	6700	.70									
2560	Southern cottonwood	1548	39.3	173.0	105.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	99.0	9.9	8.3	5.9	74.7	485	0	.66	1.0	5310	.60	26	18	15	77.1	62.2	19.2	15.2	18.6	2.0
2556	American elm	1550	34.2	197.6	130.0	20.00	10.00	30.0	23.45	25.13	6.67	3.33	10.00	7.82	8.38	98.4	9.8	8.2	6.1	73.0	705	0	.47	1.3	2659	.49										
																					700	1	.48	1.3	2700	.49	24	15	12	75.8	63.6	21.3	13.0	22.4	1.7
																					550	27	.65	1.1	4300	.60									
2558	Sugarberry	1545	15.0	152.9	130.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	99.0	9.9	8.3	5.8	74.3	720	0	.44	.8	2700	.48										
																					700	6	.47	.8	2800	.49	29	19	15	72.3	57.4	23.3	15.3	24.3	1.6
																					550	22	.58	.8	3400	.55									
2561	Green ash	1546	17.2	169.1	140.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	99.0	9.9	8.3	5.9	75.3	735	0	.31	.7	1790	.42										
																					700	8	.38	.7	2500	.46	27	17	14	70.0	56.6	24.7	14.6	26.5	1.7
																					550	24	.44	.7	3200	.51									
2562	Bitter pecan	1547	35.9	249.6	160.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	98.1	9.8	8.2	5.9	73.5	700	0	.42	.9	2740	.48	25	15	12	75.5	62.3	21.6	17.7	21.4	1.9
																					550	21	.56	.9	3700	.57									
2517	Blackjack oak	1508	25.6	201.7	150.0	26.67	13.34	40.0	31.25	33.50	6.67	3.33	10.00	7.82	8.38	...	..	..	9.4	75.7	795	40	.17	.6	945	.36										
																					700	50	.20	.5	1300	.39	18	12	9	69.8	56.8	23.2	18.7	...	..
																					550	68	.24	.6	1800	.43									
2559	Southern yellow pine	1554	32.1	206.2	140.0	16.67	8.33	25.0	19.54	20.94	6.67	3.33	10.00	7.82	8.38	97.1	9.7	8.1	5.7	76.1	820	0	.31	1.2	1237	.36										
																					700	8	.36	1.2	1700	.42	22	13	10	67.3	53.9	27.4	10.2	27.3	1.8
																					550	20	.35	.9	2400	.48									
SERIES II. SODÆ SEMICHEMICAL PROCESS																																				
2566	Black willow	1549	27.0	137.0	100.0	25.00	....	25.0	19.4	25.00	10.00	...	10.00	7.75	10.00	98.8	9.9	9.9	5.7	76.0	565	0	.42	.8	2670	.54	36	25	21	73.7	58.6	21.8	14.4	23.6	1.2
																					550	1	.44	.8	2900	.54									
2565	Sugarberry	1545	16.4	155.5	130.0	25.00	....	25.0	19.4	25.00	10.00	...	10.00	7.75	10.00	98.4	9.8	9.8	5.6	78.4	790	0	.21	.5	926	.36										
																					700	15	.25	.6	1400	.39	37	25	19	66.6	53.6	27.5	15.3	29.1	1.1
																					550	32	.34	.6	1900	.43									
2564	Southern yellow pine	1554	33.2	187.1	125.0	25.00	....	25.0	19.4	25.00	10.00	...	10.00	7.75	10.00	97.2	9.7	9.7	5.4	74.7	760	0	.23	1.0	1065	.33										
																					700	3	.22	.8	1100	.34	35	21	15	64.2	51.6	31.2	10.0	40.4	1.5
																					550	11	.22	.6	1200	.39									

[1] All digestions were made in a 14-cubic foot, steam-jacketed tumbling digester heated indirectly with steam.
The cooking conditions other than those given were as follows:

Temperature increase period	1.75 hr.
Duration at maximum temperature	1.5 hr. except digestion 2556, which was cooked for 1 hr. at maximum temperature.
Maximum digestion temperature	170° C.
Volume of cooking liquor (including moisture in chips) per 100 lb. of moisture-free wood	48 gal. except digestions 2556 and 2517, which were 40 gal. and 30 gal., respectively.
Sulphidity of sulphate digestions	33.9%.

[2] Pulps were in the form of softened chips and were therefore not screenable.

in their chemical composition, the yields of pulp obtained by either the sulphate or the soda semichemical processes fell within a narrow range (73 to 78%). The lowest yield (73%) was obtained from American elm (cook 2556). Although this wood was cooked with a liquor slightly more concentrated than that used for most of the other species, its somewhat lower yield cannot be attributed to this fact, for the blackjack oak with a lower cellulose content and higher lignin and extractives contents, gave a yield of 75.7% even though it was cooked at a still higher concentration.

Pulp Properties

The freeness values of the pulps after Bauer milling and before processing in the test beater were low in comparison with ordinary kraft pulps from the same species. This probably indicates that in addition to fiberization some fibrillation and cutting of the fibers has occurred. Both the hardwood pulps and the pine pulps required only short periods of additional processing in the test beater to lower their freeness to 550 ml. (Schopper-Riegler). The density values of the sheeted Bauer-milled pulps, with the exception of black willow and cottonwood, were about equal to values obtained from well-cooked sulphate pulps but, in contrast to such pulps, showed little increase in sheet density on continued beating in the test beater. There appeared to be a trend indicating an increase in pulp sheet density with a decrease in the density of the wood. In general, there was a trend toward an increase in the strength properties of the hardwood pulps as the density of the wood decreased.

The sulphate semichemical pulps were higher in strength than those made from the same species with caustic soda alone. Most of the hardwood pulps, especially those from the less dense species, were considerably stronger than that from the longer-fibered southern yellow pine, which must be cooked to much lower yields before the inherent strength in its fibers is realized.

Chemical Analysis of Pulps

Like the strength properties, the cellulose and alpha-cellulose contents of both the sulphate and soda hardwood semichemical pulps increased with a decrease in density of the wood and were considerably higher than those of the pine pulps. The reverse was true regarding their lignin content. There appeared to be no special trend regarding the pentosan contents of the pulps, but, as expected, all the hardwood pulps contained much more of this type of material than the southern yellow pine pulps.

Properties of the Nine-point Corrugating Boards

The data in Table III compare the strength properties of the nine-point experimental boards made on the laboratory fourdrinier machine with those of several commercial boards of the same type.

In general, the strength properties of the boards varied considerably among the several species and also as to the pulping process employed. The sulphate semichemical boards were considerably stronger in all respects than those made entirely with caustic soda liquors. The trend in bursting and tensile strengths and the densities of the corrugating boards, like those of the corresponding pulps, showed an increase as the density of the woods decreased. Of special interest, is the fact that the hardwood semichemical boards were superior in bursting and tensile strengths to those made from southern yellow pine by the same method. In their tearing resistance the black willow and American elm corrugating boards were outstanding among the boards made from the several hardwoods and were even slightly superior to that made from the long-fibered southern yellow pine.

The experimental hardwood semichemical boards were at least equal to and in most cases superior to the various types of commercial boards in all strength properties with the exception of bursting and tearing strength of the pine kraft board. Noteworthy is the fact that the tensile strength of several

TABLE III.—PROPERTIES OF CORRUGATING BOARDS FROM SOUTHERN HARDWOOD AND SOUTHERN YELLOW PINE SULPHATE AND SODA SEMICHEMICAL PULPS, AND COMMERCIAL BOARDS

Designation		Species or Kind of Board	Bauer mill[1] data		Physical Properties of Machine-made Papers.[2] Tests made at 75° F. and 50% R.H.									
Machine Run or Test No.	Digestion No.		Run No.	Freeness (Schopper-Riegler), ml.	Weight per Ream 25x40—500, lb.	Weight per 1,000 sq. ft., lb.	Thickness, m/m.	Density, g./ml.	Bursting Strength, Points per lb. per ream	Tearing Resistance, Grams per lb. per ream	Folding Endurance, Double folds	Tensile Strength, Pounds per sq. in.	Porosity, sec.	Stretch, %	Gloss, %	Ash Content, %
								SERIES I. SULPHATE SEMICHEMICAL PULPS								
1765	2557	Black willow	22	710	145.7	42.0	9.5	0.85	0.59	1.14	979	6395	173.8	6.70	49.1	1.8
1784	2560	Southern cottonwood	29	485	136.7	39.4	9.0	.84	.64	.95	41	7035	471.4	7.30	53.0	2.9
1764	2556	American elm	21	705	117.5	33.8	9.4	.69	.38	1.13	231	3766	14.4	5.05	39.7	1.6
1783	2558	Sugarberry	27	720	97.6	28.1	8.4	.64	.44	.89	80	4127	16.2	5.05	37.5	2.1
1788	2561	Green ash	30	735	111.0	32.0	9.9	.63	.31	.66	10	3330	16.5	4.45	38.8	1.6
1789	2562	Bitter pecan	31	700	123.0	35.4	10.0	.67	.48	.92	42	4243	27.3	5.85	40.1	2.4
1613	2517	Blackjack oak	([3])	770	95.5	27.5	9.5	.55	.32	.70	...	2575	....	4.00	...	..
1787	2559	Southern yellow pine	28	820	95.2	27.4	10.0	.52	.32	1.06	55	2649	10.6	4.95	43.5	2.1
								SERIES II. SODA SEMICHEMICAL PULPS								
1816	2566	Black willow	37	565	125.4	36.1	9.8	.70	.40	.94	16	5050	308.0	3.55	43.0	1.6
1815	2565	Sugarberry	33	790	85.8	24.7	9.5	.51	.19	.66	3	2490	4.0	2.25	30.0	1.8
1814	2564	Southern yellow pine	36	760	88.2	24.5	10.9	.45	.16	.83	4	1336	4.5	2.25	33.5	1.7
								COMMERCIAL CORRUGATING BOARDS								
T-6767....		Pine kraft	..	...	90.1	25.9	9.6	.52	.73	2.80	...	3988	7.0	5.50	34.2	..
T-6769....		Pine groundwood	..	...	106.5	30.7	10.5	.56	.31	.74	...	2987	114.0	2.90	37.5	..
T-6768....		Chestnut chip	..	...	111.2	32.0	10.9	.56	.23	.72	...	2440	20.0	2.40	50.0	..
T-6078....		Straw	..	...	120.3	34.6	10.6	.63	.17	.64	...	1950	....	1.60	...	..

[1] Bauer mill treated pulp was given an additional light jordan treatment for machine runs 1788 and 1789.
[2] 0.5% rosin size was added to each run and the final pH was adjusted to 4.5-5.0 with alum before running over the paper machine.
[3] Processed in a 40-lb. beater and jordaned, beater runs 1209 and 1210.

of the hardwood boards far exceeded that of the commercial pine kraft corrugating material.

One of the most noticeable characteristics of the hardwood sulphate semichemical boards is their high degree of stiffness, a property which is desirable in the fabrication of wound tubes and laminated solid paperboards as well as in corrugating containers.

The sulphate semichemical blackjack oak nine-point board was run over the laboratory corrugating machine and fabricated into corrugated box boards by gluing either to a 16-point kraft liner or to a blackjack oak liner made from the same kind of pulp. In view of the good quality of the semichemical blackjack oak board and its performance on the corrugating machine it was indicated that corrugated container boards made from this material would be satisfactory in every respect. Since the blackjack oak board was one of the weaker nine-point boards, the suitability of the other hardwood boards is indicated.

Conclusions

The experimental data indicate that hardwood soda and sulphate semichemical pulps of high yield (75%) are technically satisfactory for the production of nine-point corrugating boards and also indicate the possibilities for their use in other products.

Literature Cited

1. McGovern and Chidester, U. S. Forest Products Laboratory Mimeo. No. 1292.
2. Martin, J. S., *Southern Pulp and Paper J.*, 6, (7) 13, Dec., 1943.

A Preliminary Report on the Addition of Synthetic Salt Cake to Green Liquor*

By Vernon Woodside[1], J. D. MacMahon[2], and G. P. Vincent[1]

Abstract

Synthetic salt cake, which is an intimate fusion of sulphur and soda ash in the correct molecular proportions, has been used in commercial sulphate pulping operations for at least a year. Analyses of the cooking liquors and suggestions on its use are given.

It is claimed that many operating difficulties are eliminated, a more economical operation results, and a more uniform pulp is produced when synthetic salt cake is used in the green liquor in the manufacture of sulphate pulp.

In making kraft pulp, the conventional procedure has been to add salt cake to the black liquor, and burn the mixture in a smelting furnace. This treatment reduces the salt cake to sodium sulphide, and the organic soda sulphur compounds in the black liquor to sodium carbonate and sodium sulphide. The smelt thus obtained is dissolved in wash water, forming green liquor, which is then causticized with lime. Caustic soda is formed from the sodium carbonate, and the sulphide is left intact.

Synthetic salt cake is an intimate fusion of sulphur and soda ash in the correct molecular proportions and does not need to be smelted. It may be added directly to the green liquor in the dissolving tank. Solution is readily effected, and the cooking liquor which is formed upon subsequent causticization gives results comparable to those obtained from liquor made in the usual manner.

Ordinary cooking liquor consists mainly of sodium hydroxide and sodium sulphide. The liquor usually contains also small proportions of sodium carbonate, sodium sulphate, sodium thiosulphate, and polysulphide. The sodium polysulphide present, however, has generally been regarded as either useless or actually detrimental.

In contrast with this theory of kraft pulp chemistry, the solution of synthetic salt cake in the green liquor gives chiefly sodium polysulphide, rather than sodium sulphide as the active chemical, with no adverse effects on the quality of the pulp. Nor is there any evidence that the high percentage of polysulphides increase corrosion. Laboratory tests have shown no difference in corrosion because of addition at the green liquor stage. Furthermore, in a mill operated for 1 year with this new process, no increase in corrosion has been observed.

Cooking Liquors

The following table illustrates cooking liquors which have been used to advantage in plant scale experiments:

TABLE I

	A Lb. per gal.	B Lb. per gal.	C Lb. per gal.
Sodium sulphide	0.217	0.005	0.099
Sodium polysulphide	0.227	0.236	0.260
Sodium sulphate	0.188	0.138	0.140
Sodium thiosulphate	0.152	0.222	0.162
Sodium sulphite	none	none	none
Total sulphur as sulphur	0.271	0.271	0.265
Sulphide sulphur as sulphur	0.162	0.076	0.193
Sulphide sulphur as Na_2O	0.312	0.147	0.373
Caustic soda as Na_2O	0.680	0.750	0.700
Sodium carbonate as Na_2O	0.160	0.200	0.170

In liquor A, the ratio of polysulphide to sulphide was approximately 1:1, while the sulphidity was approximately 0.32. In liquor B, the ratio was approximately 50:1, and the sulphidity approximately 0.17. Liquor C, which represents the most frequently used proportions, contained polysulphide and sulphide in the ratio of approximately 2.6:1, and a sulphidity of 0.35.

In a continuous commercial operation using this process, the average composition of liquor, as calculated over the period of 1 month, was as follows (a comparison with ordinary kraft liquor is given):

The marked difference between the conventional

TABLE II

	New Process Lb. per gal.	Ordinary Kraft Process Lb. per gal.
Sodium sulphide	0.123	0.296
Sodium polysulphide	0.218	0.081
Sodium sulphate	0.135	0.094
Sodium thiosulphate	0.200	0.134
Sodium sulphite	none	none
Total sulphur as sulphur	0.288	0.243
Sulphide sulphur as sulphur	0.177	0.168
Sulphide sulphur as Na_2O	0.343	0.325
Caustic soda as Na_2O	0.690	0.665
Sodium carbonate as Na_2O	0.167	0.141

* Presented at the Alkaline Pulping Committee meeting of the Technical Association of the Pulp and Paper Industry at Savannah, Ga., Oct. 19-21, 1944.

[1] Member TAPPI; The Mathieson Alkali Works, Inc.

[2] The Mathieson Alkali Works, Inc.

kraft cooking liquor and the cooking liquor produced by the introduction of synthetic salt cake into the green liquor may be seen from the above comparison. The average ratio of polysulphide to sulphide was about 1.8:1 in the new process, and 0.25:1 in the old.

In a further period of operations, the average composition of the cooking liquor, as computed by averaging the daily routine analyses, was as follows:

TABLE III

	Average Lb. per gal.	High Lb. per gal.	Low Lb. per gal.
Sodium sulphide	0.097	0.165	0.006
Sodium polysulphide	0.247	0.286	0.211
Sodium sulphate	0.139	0.266	0.070
Sodium thiosulphate	0.183	0.294	0.122
Sodium sulphite	none	none	none
Total sulphur as sulphur	0.272	0.290	0.240
Sulphide sulphur as sulphur	0.184	0.206	0.162
Sulphide sulphur as Na_2O	0.356	0.399	0.313
Caustic soda as Na_2O	0.692	0.770	0.560
Sodium carbonate as Na_2O	0.171	0.300	0.120

The average ratio of polysulphide to sulphide was approximately 2.5:1, and the sulphidity was 0.34. Over this period, the ratio of polysulphides to sulphides varied from about 1.3:1 to about 50:1. While the concentration of the liquor may be maintained within relatively narrower limits, it is of interest to note that satisfactory results may be obtained over these wide limits.

The exact role of polysulphide in the cooking liquor is as yet undetermined, but the fact of its presence without harm to the pulp is fully demonstrated by these experiments. Moreover, since the polysulphide may represent 50% or more of the sulphidity of a satisfactory cooking liquor, it must be concluded that polysulphide plays an active part in the pulping process and can satisfactorily replace a large proportion of the sodium sulphide.

Method of Addition

The method of addition of the synthetic salt cake to the green liquor dissolver tank will vary, of course, with plant custom.

For those plants which use a batch system, a measured quantity of the salt cake is added to the dissolver tank. The necessary amount of smelt salts are then run in, and the liquor is drawn off to the causticizing operation.

In one process operating according to this procedure, 1500 pounds of salt cake were added per batch, this being equivalent to 0.335 pounds per gallon of green liquor.

For plants using a continuous system, the synthetic salt cake addition may be continuous at a predetermined rate. The first wash may also be fed at a uniform rate to the dissolver tank, and the resulting green liquor may be withdrawn continuously to be causticized.

Satisfactory results have been obtained in continuous feed operations using 0.261 to 0.321 pounds of synthetic salt cake per gallon of green liquor.

While the best results have been obtained with concentrations of from about 0.90 to 1.10 pounds, calculated as sodium oxide, per gallon of cooking liquor, the concentration of active chemicals in the cooking liquor may be varied in different operations.

Advantages

The required amounts of synthetic salt cake to be added may be readily determined by the routine liquor analysis. A uniform pulp may then be obtained by means of a single control, regulating the proportion of make-up chemical to smelt salts.

Several economies are effected by addition to the green liquor, which eliminates the necessity for reducing the salt cake in the smelting furnace. In addition to an increased furnace output per unit time, resulting from the increased space available for black liquor, there is a saving in fuel, amounting to about 600 gallons of oil per day. There is also a saving in sulphur, because (a) primary flue gas losses from the salt cake are eliminated, and (b) there is better reduction to sulphide, synthetic salt cake reduction often running as high as 95%.

Many operating difficulties are eliminated by this new procedure. Since only black liquor is being introduced into the furnace, its performance becomes more uniform. Other improvements which have been observed are a more fluid smelt, better settling after causticizing, and a clearer white liquor.

Improved Control Over Operations

The new process also makes it possible to produce regularly a uniform pulp, since it gives the plant operator greatly improved control over operations. The addition of synthetic salt cake to the green liquor, which is easily controlled, makes for uniformity in the white liquor, the black liquor flow, the operation of the furnace, and the composition of the smelt.

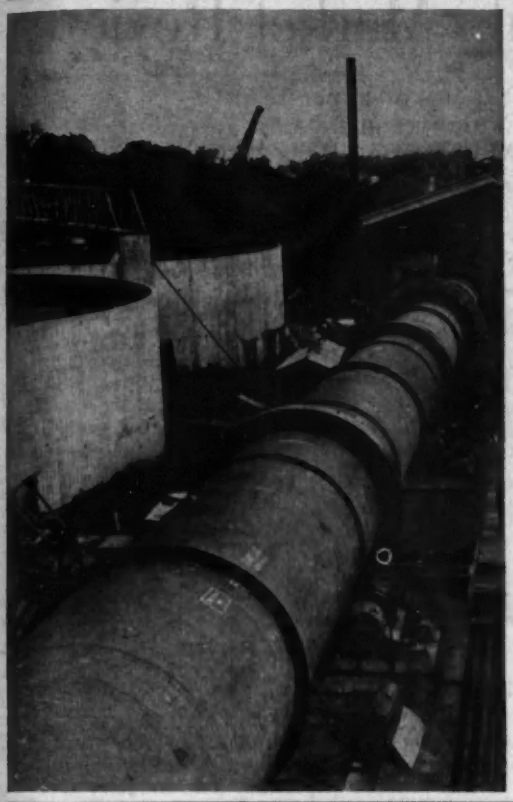
Green liquor addition also makes possible sudden increases in the white liquor stock. Large amounts of synthetic salt cake may be added directly to the green liquor without in any way interfering with furnace operation, or affecting the sulphidity of the white liquor, in contrast to the effect of adding large quantities of salt cake to the furnace.

Lake States TAPPI Hears Stanfield

The January meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry was held at 6:30 P.M. on Tuesday, January 9, 1945 at the Conway Hotel in Appleton, Wis. About 100 attended.

A very interesting talk entitled "The Human Element in Industry" was presented by Professor Boris Stanfield of Columbia University who is now on leave as a special assistant to the President of the Minnesota and Ontario Paper Company for a scientific study of labor relations.

Those present were: Francis J. Allard, Robert Anderson, L. H. Andrews, Arnold G. Beaman, Carl Bertram, Paul Boronow, Martin Bretl, M. H. Buchanan, A. H. Bunks, Glen Carroll, T. L. Christensen, H. A. Chuse, James B. Clarke, T. Collins, J. H. Compton, Jr., V. G. Cornelius, W. C. Devine, D. J. Dughie, R. T. Elias, Wm. A. Fannon, Frank D. Frampton, T. M. Gillespie, John Graff, J. W. Grimes, John A. Hanson, Wayne L. Hardesty, Dr. Emil Heuser, T. A. Howells, H. S. Johnston, Peter E. Jones, M. J. Killian, Clarence Kronquist, E. G. Krupp, Harry Lewis, Edward Lindberg, E. R. MacLaren, H. P. Madsen, N. L. Malcove, A. E. May, R. C. McKee, L. A. Moss, H. A. Norseen, John G. Obrecht, G. Oswalt, A. W. Ottmann, Peter A. Paulson, F. G. Pavlick, T. R. Probst, W. B. Pusey, F. E. Quick, E. W. Rasmussen, W. S. Robards, H. A. Schauer, John E. Siegel, L. E. Smith, L. J. Smith, A. J. Schierl, B. M. Stanfield, Guy R. Stearns, W. H. Swanson, Fred Schwartz, Lester J. Small, Gust A. Smedlund, R. A. Stillings, J. E. Todd, M. J. Taylor, Cornelius Van Den Boom, H. Vanderhei, Martin Van De Laarschot, H. L. Voss, J. D. Wells, Sidney Wells and Merrill Winne.



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New York Paper and Pulp Market Review

OPA Increases Eastern Prices On Some Grades of Paper Board—More Wood Pulp Is Being Used For Explosives and Non-Paper Products—Need For More Waste Paper More Acute—Rags Active.

Office of the PAPER TRADE JOURNAL,
Wednesday, January 17, 1945.

A continued tight civilian paper market is reflected in current reports received from all sources. Government reservations of paper and paper board continue at a high level and trade requirements cannot but partially be filled. Wood pulp and many paper products have become so essential in the conduct of this widespread war that there is an insufficient supply to meet all extensive needs.

The index of general business activity for the week ended January 6 rose to 153.9, from 138.4 for the previous week, compared with 144.1 for the corresponding week last year. The index of paper board production was 176.0, compared with 116.0 for the previous week, and with 147.0 for the corresponding week last year.

Paper production for the week ended January 6 was estimated at 81.0%, compared with 70.3% for 1944, with 90.1% for 1943, with 85.7% for 1942, and with 88.4% for the corresponding week in 1941.

Paper board production for the week ended January 6 was 80.0%, compared with 63.0% for 1944, with 86.0% for 1943, with 101.0% for 1942, and with 77.0% for the corresponding week in 1941.

A method for establishing manufacturers' prices on glassine and greaseproof papers, not otherwise provided in other methods, is the subject of Amendment 1 to MPR-567, which became effective on January 15, 1945.

Paper board prices, of certain grades, sold east of the Rocky Mountains, is covered in Amendment 19, of Revised Price Schedule 32, which became effective on January 15, 1945. Ceiling prices of plain chip and news is now $50 per ton; single Manila lined chip, $62 a ton, and the price of 50-pound .016 kraft liner, $1.58 per thousand square feet.

Wood Pulp

Supplies of wood pulp are inadequate to meet the heavy all-over requirements and the WPB states that an increase in production of pulpwood is essential to the war effort. Much of the available wood pulp supply is now going into the manufacture of explosives, rayon and cellophane, and the use of wood pulp for paper board containers for military supplies is expanding rapidly. A reduction in the use of wood pulp supply to many paper mills appears likely at this date.

Rags

Mill buying of new cotton cuttings is reported active this week. As less civilian goods are being manufactured, collections are becoming lighter in volume. Prices are strong at ceiling levels.

Trading in old cotton rags is slightly more active this week and generally reported as moderate, and substantially below expectations. Prices are unchanged.

Old Rope and Bagging

Demand for old rope continues urgent in Manila fiber. Other grades are reported active this week. Prices are at ceilings.

The old bagging market reflects only slightly higher activity over last week. Volume is light and the market reported narrow. Prices are still nominal.

Old Waste Paper

Demand for old waste paper continues in excess of supply. Some mills report increasing difficulty in getting necessary tonnage. Collections are relatively good but far under the WPB quota. As more wood pulp is being consumed for non-paper production, more waste paper must be collected to meet the critical situation now prevailing. Prices on paper stock are strong at ceilings.

Twine

No change of importance has been reported in supply, prices or demand for twine this week. Prices continue firm.

Survey Finds Jobs for War Veterans

[FROM OUR REGULAR CORRESPONDENT]

A post-war survey, just completed by the American Paper and Pulp Association, indicates that the United States primary paper and pulp industry will have more than 31,000 jobs available for returning members of the armed forces.

More than 15,000 will be needed to bring the industry up to its required manpower and it is estimated that an additional 16,000, who took war jobs in the industry, will quit when the war is over.

These figures do not cover woods operations where a large number of jobs should also be available.

Ontario Co. Names Vice-Presidents

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., January 15, 1945—Ontario Paper Company, Ltd., Thorold, whose president and general manager is Arthur A. Schmon, has named two new vice-presidents. D. W. Ambridge is made third vice-president and assistant general manager, while Maj.-Gen. W. B. Kennedy becomes fourth vice-president in charge of woods operations.

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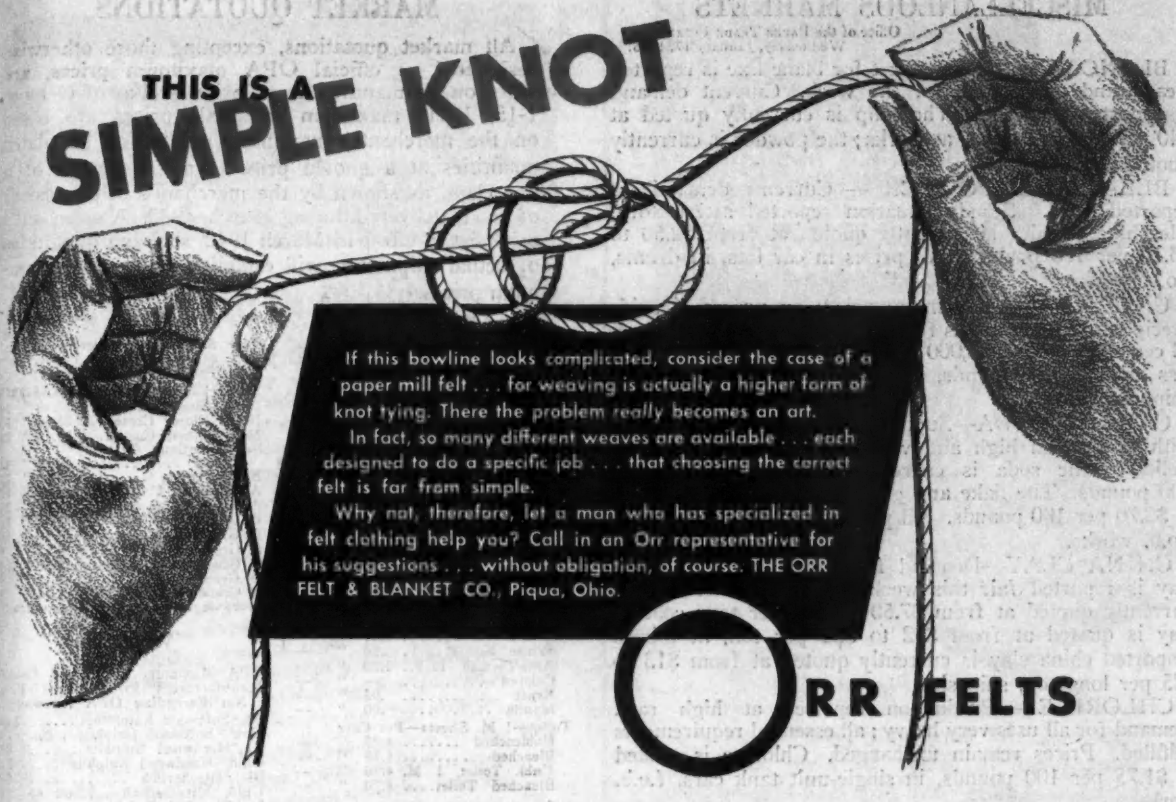

If this bowline looks complicated, consider the case of a paper mill felt . . . for weaving is actually a higher form of knot tying. There the problem *really* becomes an art.

In fact, so many different weaves are available . . . each designed to do a specific job . . . that choosing the correct felt is far from simple.

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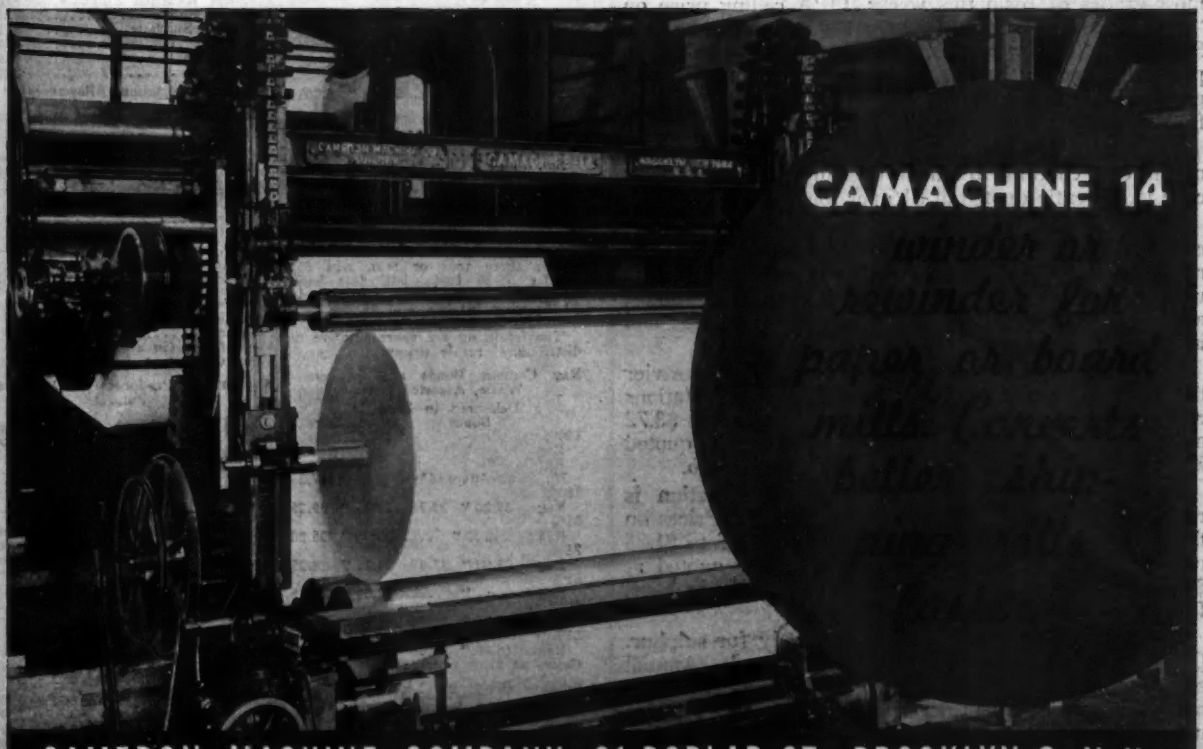
ORR FELTS



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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, January 17, 1945.

BLANC FIXE—The market for blanc fixe is reported steady and unchanged, for the week. Current demand is reported moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER — Current demand is reported good. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pounds; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Supply situation continues tight, with production high and very heavy all-over demand. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for some grades of china clay is reported fair this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE — Production reported at high rate. Demand for all uses very heavy; all essential requirements fulfilled. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—Prices are quoted unchanged at ceilings in most grades of rosin this week: OPA ceiling price on "G" gum rosin is set at $5.79 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $5.75 per 100 pounds in barrels, New York. Seventy per cent gum rosin is currently offered at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $16 per ton.

SODA ASH—Market requirements for soda ash continue heavy. Production at capacity. Some improvement reported in bagged shipments. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Market supply of corn reported heavier this week. Government heavy buyer. Starch quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA—Supply situation is reported excellent. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported moderately active Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			

Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill

Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			

Tissues—Per Ream—Carlots

White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case

Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—

Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00

Boards, per ton—

News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Li. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10 @ $46.00	$40.25 @ $47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55 @ $12.75	$11.70 @ $14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.9
No. 2 Glossy Coated	12.40	"	14.0
No. 3 Glossy Coated	11.60	"	13.5
No. 4 Glossy Coated	11.15	"	13.0
No. 1 Antique (watermarked)	10.25	"	11.7
No. 2 Offset	9.60	"	11.0
A Grade E. F.	9.35	"	10.7
A Grade S. & S. C.	9.60	"	11.0
B Grade E. F.	8.85	"	10.3
B Grade S. C.	9.10	"	10.3
C Grade E. F.	8.55	"	9.7
C Grade S. C.	8.80	"	10.0
D Grade E. F.	8.25	"	9.3
D Grade S. & S. C.	8.50	"	9.7

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowance.

Bl. Softwood Sulphite	$86.0
Unbl. Softwood Sulphite	74.0
Bl. Hardwood Sulphite	83.0
Unbl. Hardwood Sulphite	71.0
Bl. Mitscherlich	81.0
Unbl. Mitscherlich ..72.00	@ 83.0
N. Bleached Sulphate	86.0
S. Bleached Sulphate	79.0
N. Semi-Bleached Sulphate	82.0
S. Semi Bleached Sulphate	75.0
N. Unbl. Sulphate	73.0
S. Unbl. Sulphate	63.0
Bl. Soda	73.0
Unbl. Soda	68.0
Groundwood	50.0

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.00
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.00
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.00

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

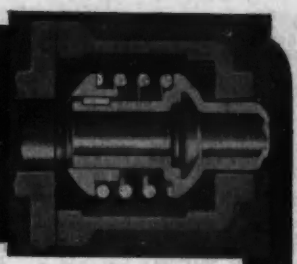
New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.00*

* OPA Maximum Prices.

JOHNSON
Rotary Pressure
JOINTS



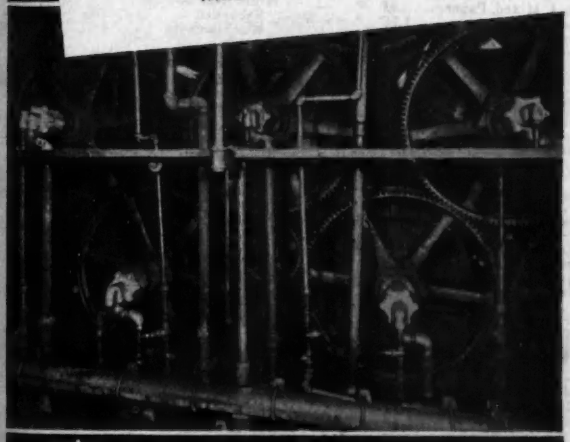
YEARS AHEAD IN DESIGN—
and right in the nick of time

● Compared to the old style stuffing boxes and steam fits, the Johnson Rotary Pressure Joint is literally years ahead. Fortunately for wartime industry, it was ready and waiting when today's call for more and more production came along.

Its packless, self-oiling, self-adjusting, self-aligning design has released for other work countless man-hours otherwise needed for maintenance. It has saved much valuable production time otherwise lost when machines are shut down to repack stuffing boxes or repair the ravages of misalignment. The way it lends itself to modern methods of syphon roll drainage has helped to step up operating efficiency in hundreds of mills.

Today these time-saving, production-boosting features of the Johnson Joint are of first consideration. At the same time remember that the Johnson Joint can pay its own way out of savings. That will give you an idea of the peacetime possibilities of Johnson Joints, and of the mill that is equipped with them.

Write for complete information



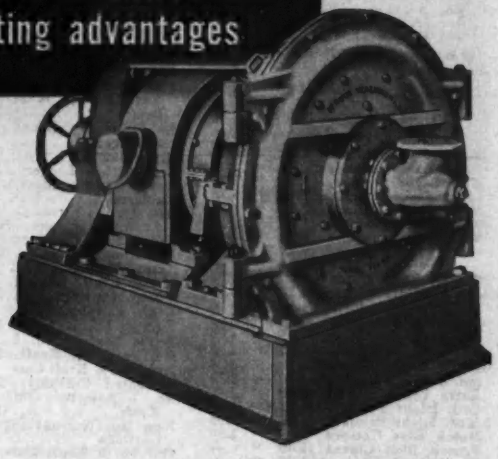
The Johnson Corporation

828 WOOD STREET — THREE RIVERS, MICH.

MAKE YOUR COMPRESSED AIR COME CLEAN

Combining the two best principles of separation—expansion and change of direction—the Johnson Separator removes more than 99% of all moisture and dirt from compressed-air lines. Simple, trouble free construction assures utmost dependability and long life. Complete range of sizes—write for literature.

The SPROUT-WALDRON 36-2 Rotary Disc REFINER you get now will build up these immediate and lasting advantages



Versatile. Interchangeable plates let you use the 36-2 Refiner on fine screen rejects, on kraft, soda, sulphite knotter, hogged-bull and raw ground-wood rejects, as well as on semi-chemical chips, bagasse, straw, de-inked stock; for refining kraft, sulphite and soda fully-cooked chemical pulp, rag and other half stocks.

Operates over wide range of consistencies. Good results have been obtained up to 8% and even more.

Conical deflector at inlet distributes stock uniformly to exceptionally durable plates of which entire areas—continuously parallel—rub fibres apart without cutting.

You get better slice, more uniform nip, lower steam and power consumption with quicker drying of a finished sheet with higher Mullen and low tear loss.

All of these and other advantages deriving from the 36-2 Refiner's 38 special features are described in Bulletin 2200-P-2. Write for it.

SW
SPROUT, WALDRON & COMPANY
Manufacturing Engineers Since 1866
21 WALDRON STREET, MUNCY, PENNSYLVANIA

Old Rags

White, No. 1—
Repacked ..... *2.80 "
Miscellaneous .... *2.30 "
White, No. 2—
Repacked ..... *2.90 "
Miscellaneous .... *2.65 "
Third and Blues—
Repacked ..... *2.20 "
Miscellaneous .... *1.80 "
Roofing Rags—
No. 1 ..... *1.55 "
No. 2 ..... *1.45 "
No. 3 (bagging).. *1.35 "
No. 4 ..... *1.35 "
No. 5A ..... *1.35 "
Old Manila Rope.. 5.75 "
OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings.. 2.25 @ 2.40
New Mixed Cuttings. 2.00 " 2.20
New Light Silesias.. 5.50 " 5.75
Light Flannelettes... 5.50 " 5.75
New White Cuttings. 7.00 " 7.50
New Light Oxfords. 4.00 " 4.50
New Light Prints... 3.00 " 3.25

Old Rags

No. 1 White Linens. 7.50 " 8.50
No. 2 White Linens. 6.50 " 7.50
No. 3 White Linens. 4.50 " —
No. 4 White Linens. 2.25 " 3.25
No. 1 White Cotton. 4.25 " 4.75
No. 2 White Cotton. 3.25 " 3.75
No. 3 White Cotton. 2.50 " 3.00
No. 4 White Cotton. 1.90 " 2.20
Extra Light Prints.. 2.00 " 2.40
Ord. Light Prints... 1.75 " 2.15
Med. Light Prints... 1.55 " 1.95
Dutch Blue Cottons. 2.25 " 2.50
French Blue Linens. 3.00 " —
Checks and Blues... 2.00 " —
Linsey Garments.... 1.90 " 2.00
Dark Cottons..... 1.50 " 1.60
Old Shopperies..... 1.30 " 1.45
New Shopperies..... 1.45 " 1.50
French Blues..... 2.25 " 2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 4.25 @ 4.35
Wool Tares, light.... 4.25 " 4.50
Wool Tares heavy.... 4.50 " 5.00
Bright Bagging.. . 4.50 " 4.85
Manila Rope—
Foreign ..... — "
Domestic ..... *5.75 " —
Jute Threads..... 5.50 " —
No. 1 Sisal Strings.. *4.00 " —
Mixed Strings..... 2.00 " —
*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½ @ —
No. 1 Hard White Envelope Cuts.... 3.12½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, one cut..... 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Mixed Groundwood Fly Leaf Shavings ..... .90 " —
Mixed Colored Shavings ..... .75 " —
Mixed Groundwood Colored Shavings.. .90 " —
Overissue Magazines ..... 1.67½" —
No. 1 Heavy Books & Magazines ..... 1.92½" —
Mixed Books..... 1.10 " —
No. 1 White Ledger.. 2.30 " —
No. 2 Mixed Ledger, colored ..... 2.00 " —
New Manila Envelope Cuttings, one cut.. 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
Extra Manilas..... 1.95 " —
Mixed Kraft, Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
Triple Sorted, No. 1 Brown Soft Kraft. 2.50 " —
New 100% Kraft Corrugated Cuttings.. 2.25 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
New Jute Corrugated Cuttings ..... .90 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Box Board Cuttings. .72½" —
White Blank News.. 1.65 " —
Overissue News..... 1.10 " —
No. 1 News..... 1.00 " —
No. 1 Mixed Paper... .95 " —
Old Corrugated Containers ..... .82½" —
Mill Wrappers..... 1.10 " —

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—
India ..... .21 @ —
White Hemp..... .21 " —
Fine Polished—
Fine India..... .36 " —
Unpolished—
Box ..... .17½" —
Paper Makers..... .17 " —
Tube Rope..... .19 " —
Wall Paper..... .20½" —
Wrapping ..... .23 " —
Soft Fiber Rope... .19 " —
Cotton ..... .28 " —

(Hard Fiber)

Medium Java..... .18 " —
Mex. Sisal..... .16 " —
Manila ..... — " —

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—
New White No. 1..... .07¾
New White No. 2..... .05¾
Light Silesias..... .05¾
Black Silesias, soft..... .03¾
New Unbleached ..... .07½
Washable Prints ..... .04¾
Washable No. 1..... .03
Blue Overall..... .05½
Cottons—According to grades—
Washable shredding ..... .01¾
Fancy Percales ..... .04¾
New Black Soft ..... .03¾
Khaki Cuttings—
Unbleachable Cotton Cuttings .03½
Bleachable Cotton Cuttings.. .04¾
Men's Corduroy ..... .03½
Ladies' Corduroy ..... .03
Cottonades ..... .03¾

Domestic Rags (Old)

White No. 1—Repacked ..... 3.80 " —
Miscellaneous No. 1. 3.20 " —
Miscellaneous No. 2. 2.65 " —
White No. 2—Repacked ..... 2.90 " —
Thirds and Blues—
Miscellaneous .... 1.80 " —
Repacked ..... 2.20 " —
Black Stockings—
(Export) .....Nominal
Roofing Stock—
Foreign No. 1....Nominal
Domestic No. 1... 1.55 " —
Domestic No. 2... 1.45 " —
Roofing Bagging.. 1.35 " —
Old Manila Rope... 5.75 " —

Bagging

(F. o. b. Phila.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 3.00 " 3.50
No. 1 Clean bright—
Sisal Strings ..... .84
No. 2 Clean bright—
Sisal Strings ..... .80
Sisal Jute ..... .02½ " .02¾
Scrap—
No. 1..... 3.25 " 3.50
No. 2..... 1.75 " 1.80
Wool Tares heavy ... 4.00 " 4.75
No. 1 New Light Burlap ..... 3.00 " 4.00
New Burlap Cuttings 3.75 " 4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled.. 2.87½" —
Soft White Shavings, one cut..... 2.50 " —
White Blank News.. 1.65 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards.. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Overissue News..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Cer Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled. 2.87½ @ —
No. 1 Hard White Shavings, ruled... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut..... 2.87½" —
Hard White Envelope Cuts, one cut..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
New Manila Envelope Cuts, one cut..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards.. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News.. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Overissue News..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1....*4.75 " —
Sisal Rope No. 2....*4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope..... 5.25 " —
Jute Cer Threads. 3.00 " 3.50
Bleachery Burlap.... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 "
Aust. Wool Pouches.. — " 3.00
New Zealand Wool Pouches ..... — " 3.50
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging.. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—
New Light Prints. .04½ @ .04¾
Fancy Percales.... .04¼ " .05
New White No 1. .06¼" .07
New Light Flannelettes ..... .05¼" .06
Canton Flannels, Bleached ..... .06 " .06½
Underwear Cutters, Bleached ..... .06¼" .06¾
Underwear Cutters, Unbleached ..... .05¾" .06
Silesias No. 1..... .06 " .06½
New Black Silesias.. .03 " .03½
Red Cotton Cuttings .03½" .04
Soft Unbleached ... .06½" .06¾
Blue Cheviots .... .05½" .06
Fancy ..... .02¼" —
Washable ..... .02¼" —
Khaki Cuttings .... .02¼" .03
O. D. Khaki..... .03½" .03½
Corduroy ..... .03¼" .03½
New Canvas ..... .06¼ " .06¾
B. V. D. Cuttings... .06¼ " .06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—
Repacked .. .... 3.80 @ —
Miscellaneous .... 3.20 " —
White No. 2—
Miscellaneous .... 2.65 " —
Twos and Blues, Repacked ..... 2.20 " —
Old Blue Overalls... 2.25 " 2.50
Thirds and Blues, Repacked ..... 2.20 " —
Miscellaneous ..... 1.80 " —
Black Stockings .... 3.50 " 4.00
Roofing Stock—
No. 1 ..... 1.55 " —
No. 2 ..... 1.45 " —
No. 3 ..... 1.35 " —
No. 4 ..... 1.35 " —
No. 5, Quality A... 1.35 " —
Quality B.. 1.20 " —
Quality C.. .95 " —
*Old Manila Rope.. 5.75 " —
*OPA Maximum Prices

Foreign Rags

(F. o. b Boston)

Canvas .....(nominal)
Dark Cottons .....(nominal)
Dutch Blues .....(nominal)
New Checks and Blues..(nominal)
Old Fustians .....(nominal)
Old Linsey Garments....(nominal)
New Silesias .....(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—
No. 1 Hard White Envelope Cuts, one cut ..... 1.37½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Misc. ..... 2.15 " —
No. 1 White Ledger.. 2.30 " —
No. 2 Ledger, colored 2.00 " —
No. 1 Heavy Books & Magazines..... 1.92½" —
Overissue Magazines. 1.67½" —
New Manila Envelope Cuttings ..... 2.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper... .95 " —
Box Board Cuttings. .72½" —
Kraft Corrugated Cuttings ..... 2.25 " —
Old Corrugated Containers ..... 1.40 " —
Overissue News..... 1.00 " —
No. 1 News..... 1.00 " —

HOW OAKITE CLEANING HELPS MILLS ECONOMIZE ON MAINTENANCE!

FASTER OAKITE WAY TO CLEAN SAVE-ALLS

Are you finding it a HARD job to clean your save-alls? If you are, then here is just what you want for a faster, better way of doing it.

By adopting this successful Oakite method, you will find that the unusual penetrating and dissolving properties of Oakite Composition No. 22 is by far the most effective and speedy way of removing slime, starches, rosins, sizing and other clogging deposits from your save-alls.

Complete details and money-saving data on this and 40 other mill maintenance jobs are contained in a helpful 28-page illustrated booklet. Send for your FREE copy today.

OAKITE PRODUCTS, INC., 48A Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE MATERIALS · METHODS · SERVICE — Buy Bonds for Victory — **CLEANING** FOR EVERY CLEANING REQUIREMENT

NEW ESSENTIAL MAINTENANCE TOOL

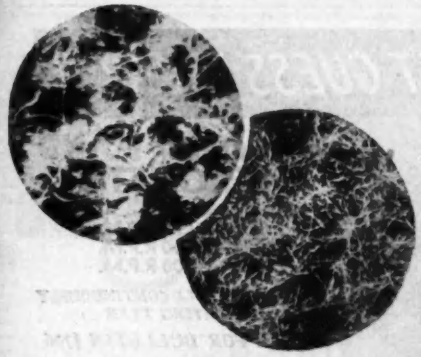
Instant clamping of slitter wheels into correct grinding position.

for "Any Make"
OF SCORE CUT SLITTER

Mills having score cut slitting machines for paper, board, textiles, rubber, rubberized fabrics, osnaburg cloth, etc., will appreciate the fact that with the Johnstone Slitter Wheel Grinder, they can recondition wheels themselves, without returning them to the manufacturer. Time and shipping delays are avoided and, in addition, they can get along with fewer wheels. The operation of this grinder is so simple that a schoolboy can unfailingly obtain a master mechanic's accuracy. It operates on any standard lighting circuit, weighs 170 lbs. and its size is 20" wide, 26" deep, and 10" high. Information on request.

Price Complete with Motor
$210.00
F.O.B. DOWNINGTOWN, PA.

JOHNSTONE
Engineering & Machine Co.
DOWNINGTOWN 5, PA.



You Can See at once Which Felt Has Been Reconditioned!

A Felt's as Good as the Reconditioning It Gets

Cleaning's not enough. Softness and porosity must be renewed. Nap must be raised. And rinsing must be *complete*—else the felt loads up too fast.

Tell us what your felt cleaning method is. We'll gladly send a liberal sample of the Magnus Felt Cleaner best suited to your needs, for trial on your felts.

MAGNUS FELT CLEANERS

really recondition, giving you soft, porous, full-napped, thoroughly clean felts, completely rinsed. There's a type to meet your requirements, whether you wash on the machine or off. And most of these cleaners do a fine job in breaking in felts, too.

MAGNUS CHEMICAL COMPANY
24 SOUTH AVENUE **GARWOOD, N. J.**

Representatives in Principal Cities

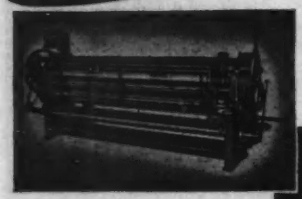
Magnus **PAPER MILL CLEANERS**

Ask us about Murray CHIPPER IMPROVEMENTS

Complete details on these new developments contained in our catalog sheet just off the press. Send for it now. It fully describes Murray Chipper Knife Holding Device that speeds up changing of chipper knives, Murray Chipper Spouts that reduce slivers and sawdust, and the new Murray method of removing chipper knives from chipper discs—all improvements patented or patent applied for.

D. J. MURRAY MANUFACTURING CO.
WAUSAU MURCO **WISCONSIN**

YOU'RE GOING TO NEED
PAPER CONVERTING MACHINERY
NOW IS THE TIME TO DISCUSS IT



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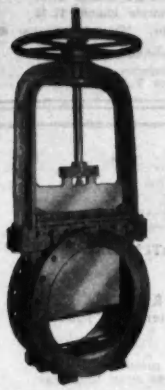

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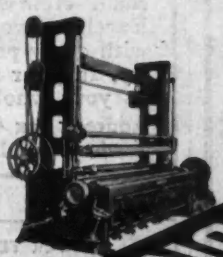

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1—1800 lb. Dayton Globe Iron Tub Beater.
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2—400 lb. Gavit—iron tub beaters.

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1—11-Roll 92" Face Calender Stack—complete with Drive.
1—36" 7-roll—Holyoke Machine.
1—77" 2-roll—Moore & White.
1—86" 5-roll—Black-Clawson.
1—72" 5-roll.

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1—Shartle Brothers Centrap.

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1—48" Diameter x 99" Face.
8—30" diameter x 72" face.
3—30" diameter x 74" face.
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1—28" two roll Embossing Calender.

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3—I. W. E. Erkenstators—bronze construction—complete with motors, starters and distributing box.

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2—Packer type 14 plate flat screens—with Witham fasteners and scraping devices.
2—6 plate Flat Screens.

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1—600 ton Dunning & Boschert hydraulic Pulp Baling Press—low and high pressure hydraulic pump, valves, piping, etc. —Platen 58" x 38" — ram 20" diameter —daylight 50"—stroke 36".

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1—Black-Clawson Jordan (belt driven).
1—#1 Emerson Jordan—including 100 H.P. motor direct connected — with starting equipment.
1—#9 Emerson Jordan—for direct connection of a motor — requires use of 400 H.P. motor.
1—Smith & Winchester.

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1—Allis Chalmers slip ring motor—200 H.P. — 3 phase, 60 cycles, 440 volts — 505 R.P.M.—with starting equipment.

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1—48" Black-Clawson paster.

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1—84" Carthage Chipper—complete and in excellent condition.
1—32" three pocket Glens Falls Grinder (for 27" wood).
3—Rotary incinerators—9' diameter x 20' long.

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2—Jones Pulpers — direct connected to 60 H. P. motors—3 phase, 60 cycle, 440 volts—forward and reverse starting.

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1—2 Bowl Reel — 112" face — bowls 20" diameter.

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500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

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29—Cut .035.
3—Cut .045.

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1—72⅝" Face x 9" diameter (soft rubber).

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2—#5 Bird Savealls.
1—North Save-all—cylinder mould 72" diameter x 100" face—used less than one year.

SHREDDERS

1—Jeffrey swing hammer type shredder—size 24" x 18"—antifriction bearing equipped.
1—#25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder—used one year.

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1—103" Hamblet Single Knife Sheeter—complete with Slitting Device and Drive.
1—110" Horne single knife rotary sheet cutter.

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1—114" Two drum Langston Slitter & Winder.
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1—Nash 100" face Suction Box.
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1—Sandusky Suction Couch Roll—18" diameter x 130" face—Complete with Sturtevant Vacuum Pump and drive mechanism.

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An unusually attractive position is offered by a large, middle-west company. The man we want must be a thorough executive with a complete background of all phases of carton manufacture and an excellent record of achievement. He will take full charge of planning and production. Remuneration will be in five figures, including a profit-sharing bonus. Write Box 45-38 care Paper Trade Journal.

F-1

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Man with some experience in the design of Centrifugal Machinery or Paper Making Equipment. This job has all the advantages to be found in working for a small but progressive company located in a small New England village. Excellent working conditions with every postwar opportunity. In your reply please tell us your whole story.

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Graduate in paper technology; or chemist or chemical engineer with pulp and paper experience. Location western New York. Work includes original research on pulp and paper problems, development work in laboratory and field, and some travel. Address Box 45-23, care Paper Trade Journal. J-18

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Positions Now Open

Chemist and assist. supt. tissue mill
Draftsmen and designers; plant, mechanical, time study and industrial engineers
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Position open in post war program of established company to sell on paper and textile mills as salesman and technician, to sell and demonstrate chemical products. Prefer chemical or mechanical training—under 35 years old. Salary would depend on qualifications and experience. State full particulars as to age, nationality, education, experience and family status. Address Box 44-800 care Paper Trade Journal. J-18

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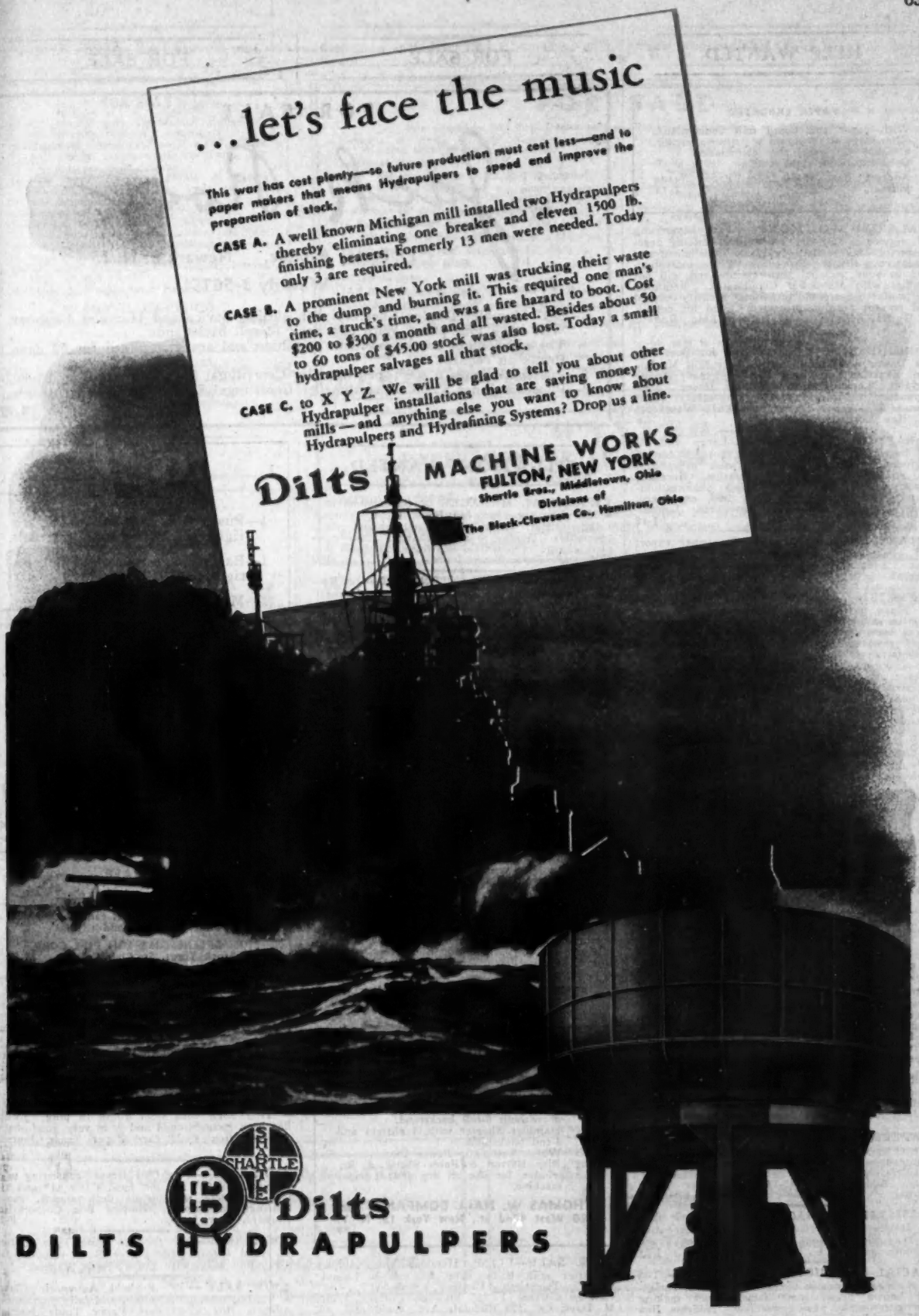
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FOR SALE

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by *Jack Ross*

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2—120" Hamblet Duplex Sheeters with slitting device and Hamblet Layboys. Will stack four piles. With two deck 12 roll backstands. These machines are in excellent condition and are guaranteed for 60 days. Prints on request.

1—Pussey & Jones 6" x 8" open impeller Centrifugal Stock Pump. Belt driven.

2—Pusey & Jones 5" x 8" open impeller Centrifugal Stock Pumps. Belt driven.

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PRACTICAL MANAGER or Superintendent—25 years experience on Book, Bond, Writing, Litho, Offset, Kraft, Board and ground wood specialties. Wishes to make change. Take complete charge of mill. Go anywhere. Address Box 45-34 care Paper Trade Journal. F-8

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43" Hamblet Sheeter.
65" Hamblet Sheeter with 4 slitters—with or without 6-roll backstand.
110" Hamblet Sheeter with 3 slitters and 4-roll backstand.
45" White Automatic Power Cutter.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.

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FOR SALE—1 - 120" Hamblet heavy duplex cutter with layboy and 12 roll backstand; 1 - 74" Twentieth Century Seybold; 1 - 63" Oswego Cutter; 1 - 38" Oswego Cutter. Frank H. Davis Co., 175 Richdale Ave., Cambridge, 40, Mass. F-1

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1—Pusey & Jones two spool, upright reel, 114" wide, slip belt.

1—Bagley & Sewall two spool, upright reel, 79" face.

1—Moore & White two spool, upright reel 79" wide, slip belt.

1—Warren winder 114" face.

2—Four drum Moore & White winders, 116" and 104" face, handle 60" diameter rolls.

7—Pulp Screens.

SHARTLE BROS. CO.
Middletown, Ohio
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Guaranteed used steel pipe and boiler tubes
Wood and steel tanks
Buildings, valves and fittings

JOS. GREENSPON'S SON PIPE CORP.
Natl. Stock Yards, St. Clair Co., Ill. M-8

FOR SALE—Two Noble and Wood Pony Monarch Jordan Fillings, Shartle Manufacture. Inquire Burrows Paper Corporation, Little Falls, N. Y. J-18

FOR SALE—1000 - 10" diameter metal plugs. Foster Paper Company, Inc., 2160 Erie St., Utica, 4, N. Y. J-18

FOR SALE — 1 - Jones Majestic Jordan — Cast Iron Shell with steel filling in plug. Jordan has been reconditioned and is in very good shape. Address Box 45-22 care Paper Trade Journal. J-18

FOR SALE—Sixty (60) Dryers consisting principally of 86" and 90" face, a few 84" and 85" face, complete with triple deck stands, gears, bearings and piping. Empire Box Corporation, Garfield, New Jersey. F-15

FOR SALE—63" Oswego Mill Type Cutter. Hand Clamp with Power Back Gauge. Address Box 45-33 care Paper Trade Journal. J-25

FOR SALE — 50" Seybold Automatic Clamp Cutter, thoroughly rebuilt and fully guaranteed. Address Box 45-43 care Paper Trade Journal. J-18

FOR SALE

FOR SALE

1—43" Heavy duty Dornbusch Embosser, anti friction equipped, rebuilt.
1—Ingersoll Rand 15" x 15" x 16" Class B1, single stage, type 10 Twin Air Compressor, belt driven.
1—Iron work for one Noble & Wood 62" x 48" beater, spare bedplate and new woods for same.
1—Section of 21 dryers 36" x 74".
1—Section of 20 dryers 36" x 84".
1—100" Shartle & Bevis waxing machine.
1—114" Beloit two drum slitter and rewinder.
1—60" x 60" Horne patent beater, bronze bars, 4" tub.
4—1000 lb. Umpherston Beaters.

FRANK H. DAVIS CO.
175 Richdale Ave., Cambridge 40, Mass.
J-25

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore, 30, Md. TF

WANTED

WANTED

One (1) Laboratory Beater
Waterbury Hydraulic Drive size 5
11—60" Diameter x 92" Face Dryers
16—48" Diameter x 92" Face Dryers
4—36" Diameter x 92" Face Dryers

with gears, frames, felt rolls and cone pulley drives. Address Box 44-708 care Paper Trade Journal. TF

WANTED

CALENDER STOCK—10" INTERMEDIATE ROLL MINIMUM
ALSO
SHEETER—SINGLE OR DOUBLE CUT-OFF
BOTH FOR 72" MACHINE

Address Box 44-728 care Paper Trade Journal. TF

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses. Dryers. Address Box 44-835 care Paper Trade Journal. tf

FOR SALE

FOR SALE

FOR SALE

One complete 98" Fourdrinier and auxiliaries, specifications as follows:—

1—Moore & White Co. 98" Fourdrinier Paper Machine (Wire 70' Long x 98" Wide).
3—Sets of Frames.
1—18" Diameter Suction Couch Roll (Sandusky).
1—150 H.P. General Electric Co. motor and starter, driving the wet end of this machine.
25—Dryers—48" Diameter x 96" Face (2 deck).
1—Baby Dryer—30" Diameter x 96" Face.
1—Bottom Felt Dryer——36" Diameter x 96" Face.
1—Top Felt Dryer—36" Diameter x 96" Face.
1—4-Roll Calender Stack.
1—2-Bowl Reel.
1—2-Drum Moore & White Co. Slitter and Winder.
7—1000 lb. Beaters (Noble and Wood Machine Co.).
1—200 H.P. motor and starter (3 phase, 60 cycles, 440 volts), driving line shaft for these beaters.
1—Motor driven Mammoth, Jr. Jordan (Noble and Wood Machine Co.).
2—10-plate Sandy Hill Flat Screens (Packer type). Witham Fasteners.
2—Sets of spare screen plates for the above Flat Screens.
1—Ames Twin Variable Speed Engine, from 80 to 200 H.P.
1—New bottom dryer felt—72 yards long x 98" wide.
1—New top dryer felt—78 yards long x 98" wide.
7—New Wet End felts—45' long x 100" wide.
1—New Fourdrinier Wire—70' long x 98" wide (60 mesh).

In addition to the above, we have available all the line shafting, piping, spare rolls, drives, stock chests, agitators, etc.
The above described machine is in excellent condition, having been in operation approximately three years on experimental work—presently on original foundations and can be seen in actual operation. Photos on request.

J. J. ROSS COMPANY, 250 Frelinghuysen Avenue, Newark 5, N. J.
Telephone Bigelow 3-3720
J-18

WANTED

PAPER CONVERTER CO. OR PAPER MILL

New England Business Man & Partner. Wish to acquire co. with good earnings record.

In reply please state size of business, types of products manufactured, and general location of plant. All replies held in strictest confidence. Box No. 45-44 care Paper Trade Journal. J-18

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

WANTED TO PURCHASE—Paper mill in operation. Can pay all cash. Large successful mill preferred. Confidential. Address Box 44-770 care Paper Trade Journal. TF

WANTED—Any Item of Paper Tube and Paper Can Machinery, Slitters, Tube Winders, Cutters, etc. etc. We will buy such machinery in any condition. Theo. Adams, 111 W. Washington St., Chicago, 2, Ill. TF

WANTED—One 56" and one 64" trim modern Cameron or Langston winder with slitting attachment just before the paper is wound on the roll. Give full description and price. Address Box 45-5 care Paper Trade Journal. J-25

WANTED—Embossing Calender. Slitter Rewinder. Both heavy duty—50" wide or wider. Address Box 45-17 care Paper Trade Journal. F-1

WANTED—Hot Melt Coating, Combining and Laminating equipment. Complete layout or component elements or items that may be converted to such use. Prefer 60" width, but can use somewhat wider or narrower. Address Box 45-18 care Paper Trade Journal. J-18

WANTED TO BUY (Not a dealer)—Complete plant (without buildings and property) for coating and laminating cotton cloth and paper with resins, pigments, glues, asphalt, waxes, lacquers, latex, etc.—or—Individual machines to fit into complete installation. Can take over capable personnel. Address Box 45-19 care Paper Trade Journal. J-18

WANTED—Second-hand Cameron Rewinder that will take a roll sixty to seventy inches in width. Address Fort Howard Paper Company, Green Bay, Wis. F-1

WANTED—48" to 56" seven roll supercalender with cotton rolls; 48" to 52" sheet cutter; 40-50 Ream Cutter. Address Box 45-42 care Paper Trade Journal. F-1

WANTED—ONE CANADIAN STANDARD FREENESS TESTER. MUST BE IN SERVICEABLE CONDITION. ADDRESS BOX 45-41 care Paper Trade Journal. J-18

WANTED—One 14 foot Globe Rotary for 100 lb. steam pressure; 1-Suction Couch Roll from 86 to 90" drilled face. Any diameter. Address Box 45-31 care Paper Trade Journal. J-18

PAPER TRADE JOURNAL

ANNUAL REVIEW NUMBER

February 22, 1945

TECHNICAL BOOKS AVAILABLE

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PAPER MAKING MATERIALS (Reading List) By Clarence J. West, Ph.D. — $3.00

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ALWAYS IN THE MARKET

for all Types of Paper Mill Felt.

Consult us before disposing of your Accumulation.

Louis Tucker & Company
"Mfgs. All Wool Blankets"
2938-42 N. Halsted St. Chicago 14, Illinois

WHERE TO BUY

ABRASIVES
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Monsanto Chemical Co.
Norton Co.

ADHESIVES
Arabol Mfg. Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Dilts Machine Works, Inc.
Deer Company
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
H. K. Porter Company Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

BAG MACHINES
Thomas W. Hall Co., Inc.
Pendevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BEARINGS
Bantam Bearings Division, The Torrington Company
Black-Clawson Company
Jones, E. D. & Sons Co.
The Manhattan Rubber Mfg. Co.
Montague Machine Works
Railway Bearing Co.
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Herman Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machinery Corp.

BLEACHING APPARATUS
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company
Valley Iron Works Co.

BOTTOMS
Harrington & Kingsford Co.
Kalamazoo Tank & Silo Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
The Frederick Iron & Steel Co.
Grinnell Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Smith & Winchester Mfg. Co.
Traylor Engineering & Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Rose J. O. Eng. Co.
Shartle Brothers Machine Co.

CHEMICALS
Altivia Corporation
Amer. Cyanamid & Chem. Corp.
Ansul Chemical Co.
Calco Chemical Co.
Diamond Alkali o.
Dispersion Process Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
The Neville Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Stauffer Chemical Company
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Pendevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
W. R. Cliffe
Ferguson, Hardy S.
Hardy, George P.
Johnson & Wiark, Inc.
The Kohler System Company
L. I. M. E.
Merritt-Chapman & Scott Corp.
Main, Inc., Chas. T.
O.Donoghue, Roderick
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Sonoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Mfg. Co.
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.
O'Donoghue, Roderick

DIGESTERS
The Biggs Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric & Manufacturing Company

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
W. A. Jones Fdy. & Mch. Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric & Manufacturing Company

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Pitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Wishnick-Tumpeer, Inc.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Kemp, W. F., Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Robinson, C. F.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Cowel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
M. F. Bowsher
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.
Westinghouse Electric & Manufacturing Company
Wilkens-Anderson Co.

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
Tide Water Associated Oil Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plohn Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric & Manufacturing Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
The Norwood Engineering Company
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
Kemp, W. F., Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
The Richardson Economy Plug Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer G.

RUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Anderson Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteaman & Co., Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Ingersoll-Rand Co.
Johnson Corp.
Lombard Governor Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Valley Iron Works

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Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
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General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
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Shartle Brothers
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RESINS
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The Neville Company
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
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Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg., Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Rosblen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
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Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
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Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Pitchburg Screen Plate Co.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
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Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
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Dietz Machine Works
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Hamblet Machine Co.
Hudson Sharp Machine Company
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Waldron Corp., John

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National Starch Products, Inc.
Stein, Hall & Co., Inc.

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Stickle Steam Specialties Co.

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The Stanley Works

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Shartle Brothers Machine Co.
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Moore & White Co.
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Shartle Brothers Machine Co.
Westinghouse Electric & Manufacturing Company.

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Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
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W. H. Loomis Talc Corp.
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Moore & White Co.
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Noble & Wood Machine Co.
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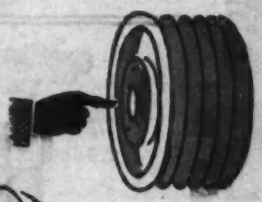

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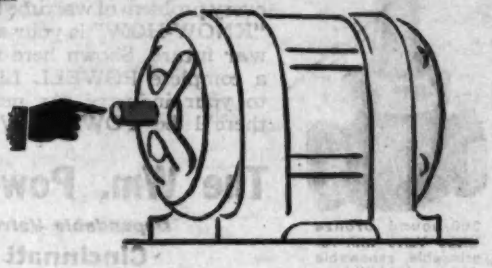

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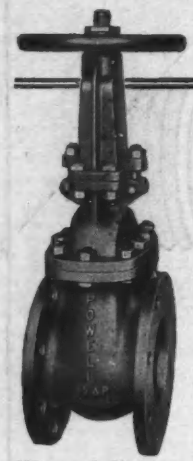

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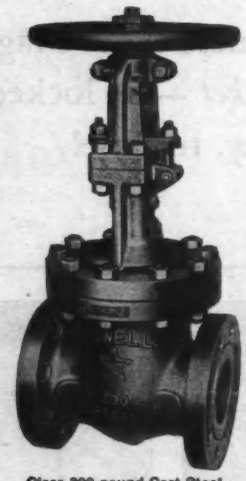

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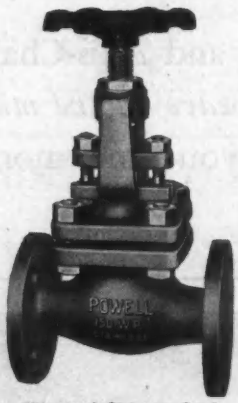

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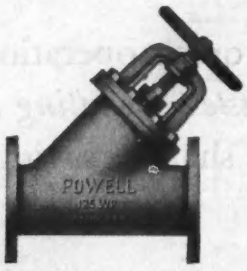

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